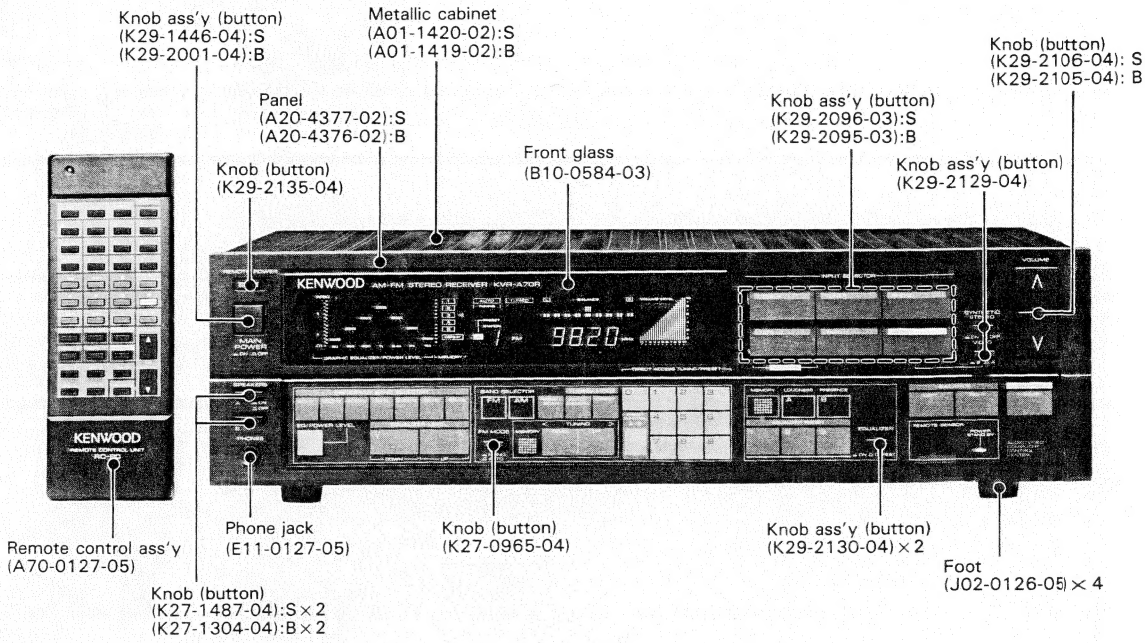
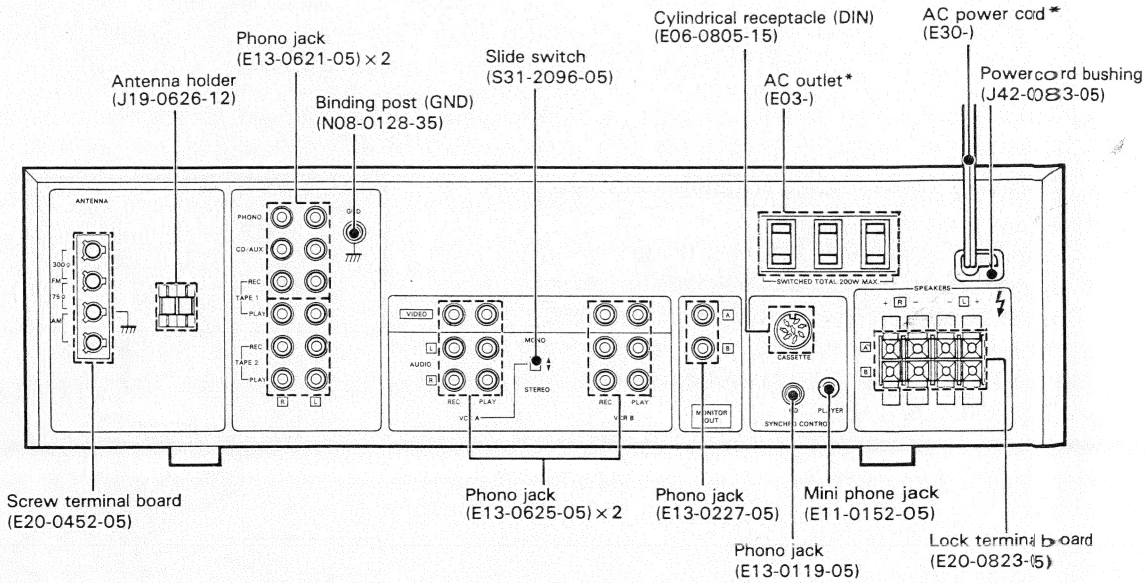
RXB 116

SERVICE MANUAL

KENWOOD KVR-A70R

AM-FM STEREO RECEIVER





Note:
The circuit description of this Service Manual should be applied for both KVR-A90R and KR-A70.

*** Refer to parts list on page 40.**
Photo is KVR-A70R (Black version).
S: Silver version
B: Black version.

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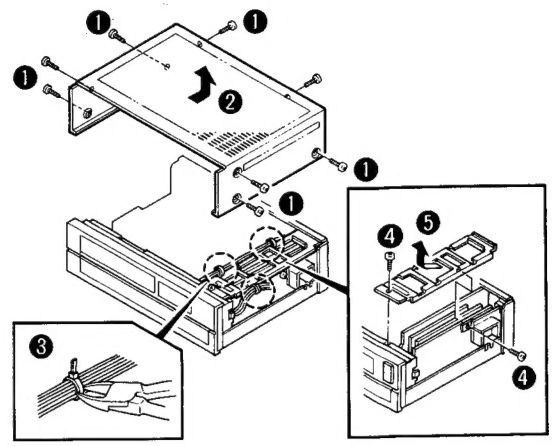
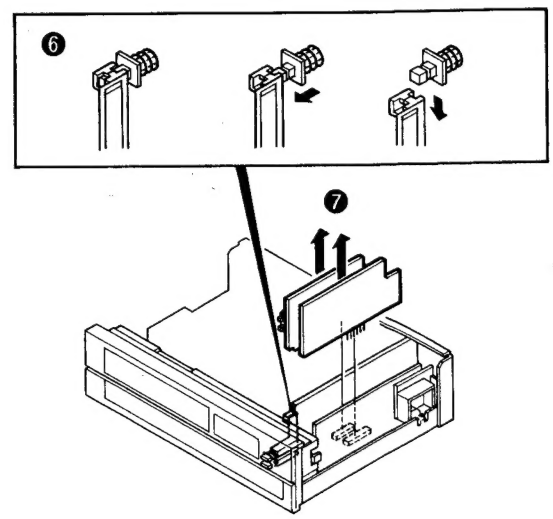
DISASSEMBLY FOR REPAIR

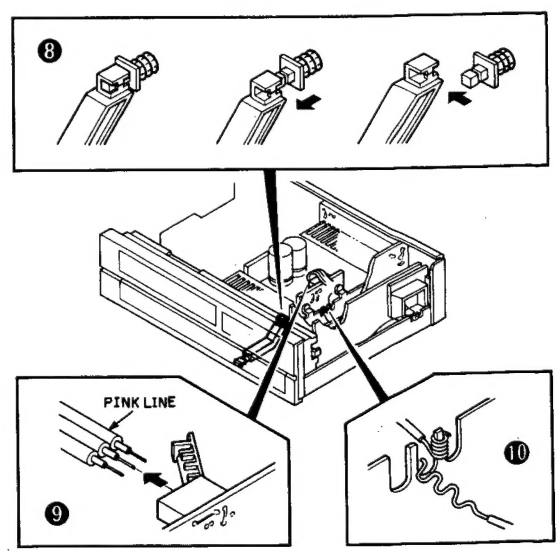
1. Remove 8 screws and remove the metallic cabinet (❶, ❷)
2. Cut the wire bands (❸).
3. Remove 1 screw retaining the frame to the sub panel and 1 screw at the side (❹).
   Slide out the frame as shown by the arrow (❺).



4. Take the knob joints from the SYNTHETIC STEREO, VIDEO switches by the following procedures (❻).
   a. Pull out the knob joint frontward till it stops.
   b. Slide the knob joint downward so that the switch shaft can be relieved from the cut part of the knob joint.
5. Pull out the video control pcb (X14-1790-11) (A/2) and receiver pcb (X14-1780-11) (D/5) (❼).

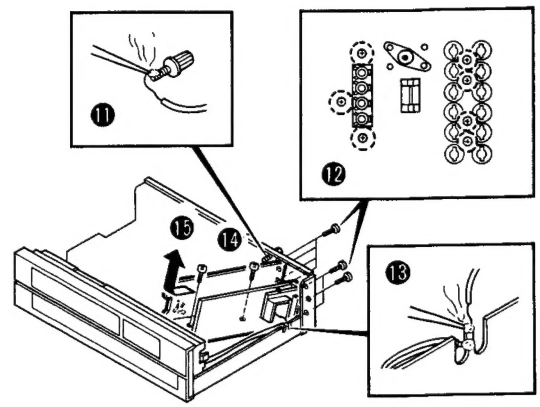


6. Take the knob joints from the EQUALIZER switches by the following procedures (❽).
   a. Pull out the knob joint frontward till it stops.
   b. Slide the knob joint leftward so that the switch shaft can be relieved from the cut part of the knob joint.
7. Disconnect the parallel cord from receiver pcb (X14-1780-11) (A/5) to power amp pcb (XO7-2220-11) (B/6) (❾).
8. Unwrap the ground lead from the receiver pcb (X14-1780-11) (A/5) (❿).

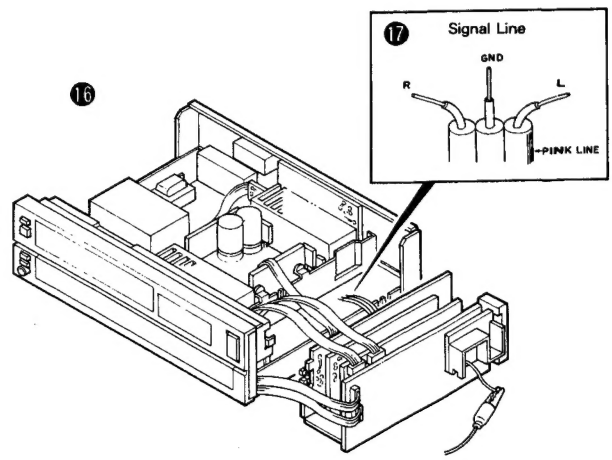


DISASSEMBLY FOR REPAIR

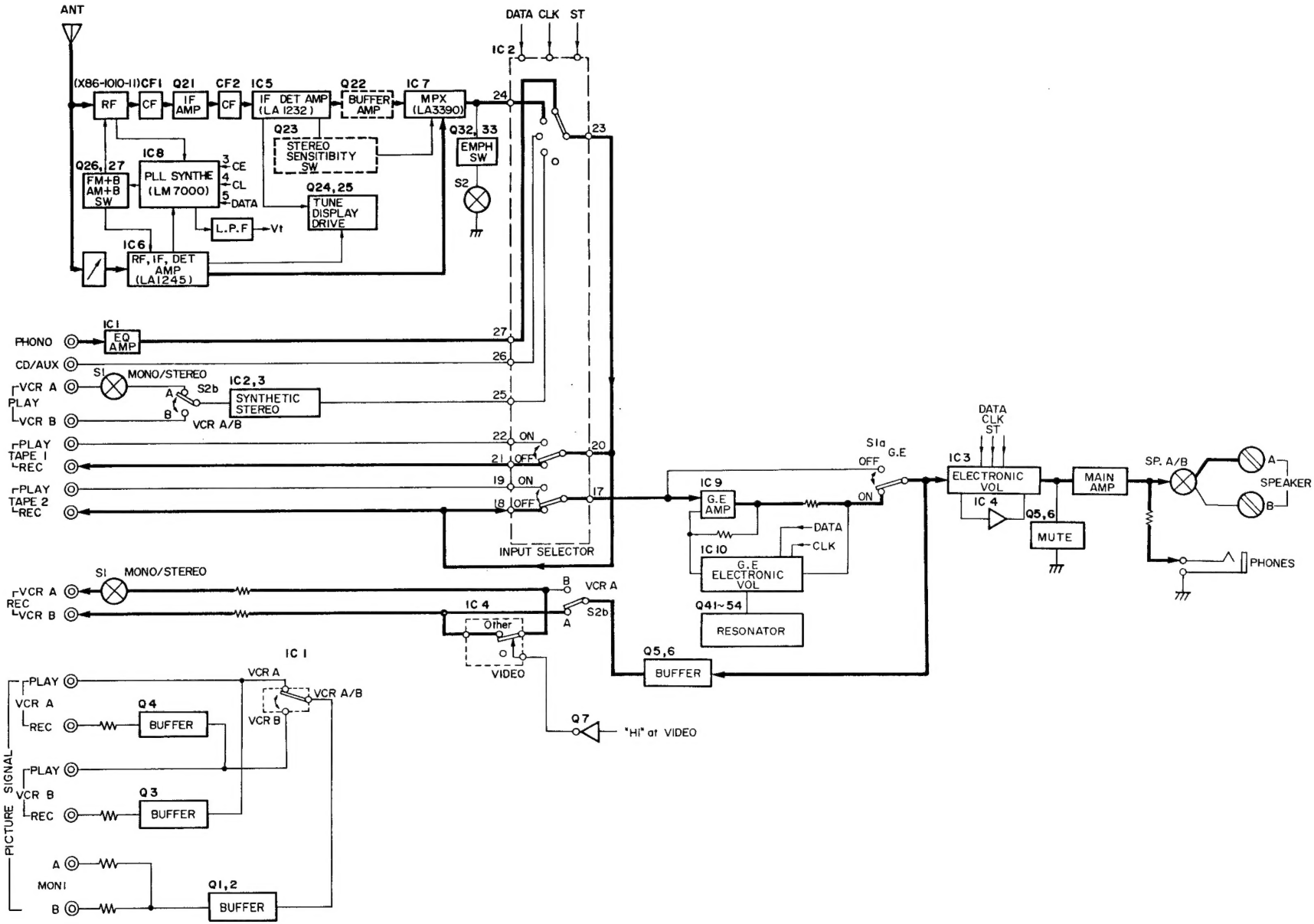
9. Unsolder the ground lead to the GND terminal (⓫).
10. Remove 7 screws retaining the antenna terminal and phono jacks (⓬).
11. Unsolder the ground lead from receiver pcb (X14-1780-11) (C/5) (⓭).
12. Remove 2 screws retaining the receiver pcb (X14-1780-11) (B/5) (⓮). This receiver pcb will be called mother pcb hereinafter.
13. Disconnect coaxiale cable from coaxiale receptacle. Lift the front side of the mother pcb and take it out to the side (⓯).



14. Plug in the video control pcb (X14-1790-11) (A/2) and receiver pcb (X14-1780-11) (D/5), once taken out in step 5, back to the mother pcb (⓰).
15. The KVR-A70R can be checked at this condition by grounding the ground leads which were taken off from the chassis.
    The parallel cords disconnected in step 7 is a signal line to the power amp pcb (⓱).



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

Power amplifier unit (X07-2220-11)

Components	Functions	Operations
Q1 - Q16	Main amp, (voltage amp)	
Q17 - Q20	Bias, temperature compensation	
Q21 - Q24	Driver stage	
Q25 - Q28	Final stage	
Q29, Q30, Q33	4 Ω limiter circuit	
Q31, Q32	Overload detection	
Q34 - Q49	Constant-voltage power regulation and timing circuitry	
Q50 - Q52	Power supply relay drive circuit	
IC1	Output relay drive, protection	
IC2	Remote control pre-amp	

Display unit (X14-1770-11)

Components	Functions	Operations
IC1 (μPD7519G-172-36)	Display, control	
IC2 (LC7565)	Graphic equalizer display	
IC3, IC4 (μPD4028BC)	Decoder of 4 to 10	
Q1 - Q3 (2SA933)	Switching circuit	
Q4 (2SC1845)	Volume control circuit	Outputs control signal for muting when the volume is minimum.
Q5 - Q9 (2SC945)	Current buffer	
Q10 - Q17 (2SC945)	STROBE/DATA/CLK control	Differentiates the STROBE signal and transmits the DATA and CLK signals using the differentiated signal.
Q18 (2SC945)	Tuner control	

Receiver unit (X14-1780-11)

Components	Functions	Operations
Q1 - Q4	EQ amp 1st stage	
Q5, Q6	Muting transistors	ON when a selector switch (except TAPE-2) is operated or when the volume is set to $-\infty$.
Q7	Muting transistor driver	
Q21	IF amplifier	
Q22	Buffer	
Q23	Stereo sensitivity adjustment (E type)	Transistor ON with ANT input at 22 to 23 dB.
Q24	Tuning display drive	Q24 OFF during tuning.
Q26, Q27	AM + B/FM + B switching	Q26: FM + B, Q27: AM + B
Q28, Q29	Synthesizer LPF	
Q30	Ripple filter	

CIRCUIT DESCRIPTION

Components	Functions	Operations
Q31	+5 V AVR	
Q32, Q33	Emphasis switching transistors (U type)	Transistor ON at 75 μs
Q41 - Q54	Semiconductor inductor	
Q55	Level shifting	
Q56	Constant-voltage regulated power supply (7 V)	
IC1	EQ amplifier	
IC2	Input selector application	Analog switch
IC3	Electronic volume	
IC4	Buffer amplifier	
IC5	FM IF detection	
IC6	AM	
IC7	MPX	
IC8	PLL synthesizer	
IC9	Graphic equalizer amplifier	
IC10	Graphic equalizer electronic volume	

Video control unit (X14-1790-11)

Components	Functions	Operations
Q1 - Q4	Video signal buffer	
Q5, Q6	Audio buffer	
Q7	Level shifting and inversion	
IC1	Video signal switching	
IC2, IC3	Synthetic stereo	
IC4	Audio REC switching circuit	Switches between 1 - 2 and 10 - 11: Open in VIDEO mode, Short-circuited in modes other than VIDEO.

CIRCUIT DESCRIPTION

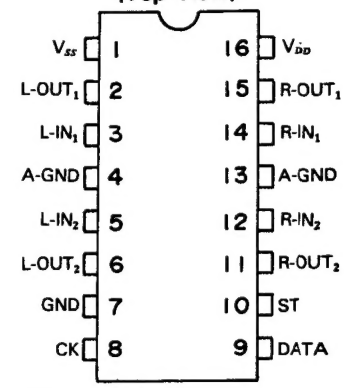
Electronic volume: IC3 (TC9176P)

The TC9176P is an electronic volume specially developed for audio equipment.
The volume and balance can be controlled by inputting external serial data.

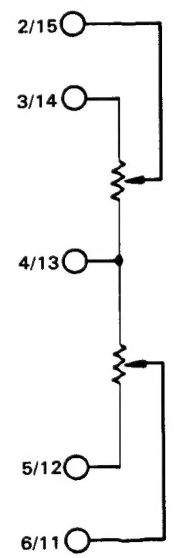
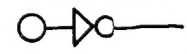
- Volume control possible in 40 steps; 0 dB to −76 dB in 2 dB steps plus −∞.
- Built-in L and R channel volumes can be controlled independently, making possible the balance control function.

Pin configuration

TC9176P
(Top View)



Functions of terminals (TC9176P)

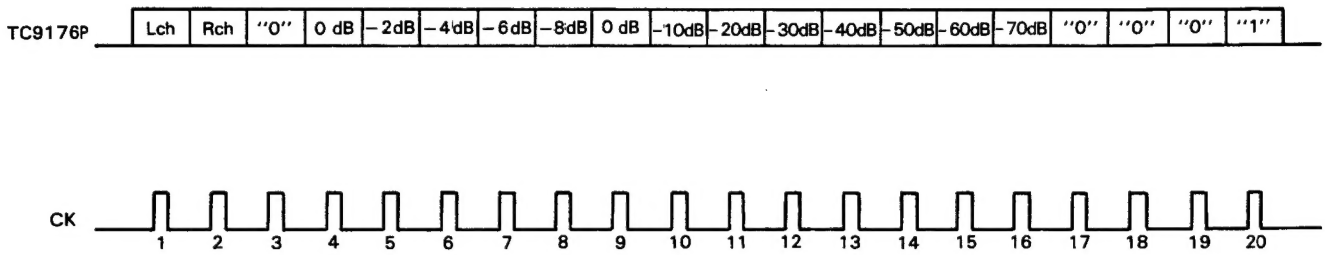
No.	Symbol	Functions	Remarks
2 15	L-OUT1 R-OUT1	10 dB step attenuator output. Signals applied to IN are attenuated into 8 steps; from 0 to −70 dB in 10 dB steps.	(L/R) 
3 14	L-IN1 R-IN1	10 dB step attenuator input	
4 13	A-GND	AC ground terminals	
5 12	L-IN2 R-IN2	2 dB attenuator input	
6 11	L-OUT2 R-OUT2	2 dB attenuator output. Signals applied to IN are attenuated in 5 steps; from 0 to 8 dB in 2 dB steps.	
9	DATA	Attenuation/channel selection data input. The 20 bit data is input with the CK signal.	Low-threshold input inverter 
8	CK	Clock input Clock input is used to fetch the data input from the DATA terminal.	- do-
10	ST	Strobe input The attenuation/channel selection data input from the DATA and CK terminals are latched when the level of this terminal becomes "H". Old data is not changed when "H" level is not applied to this terminal.	- do-
16 7 1	V_{DD} GND Vss	(+) power supply terminal Ground terminal (−) power supply terminal	

CIRCUIT DESCRIPTION

Operation description

Setting the amount of attenuation

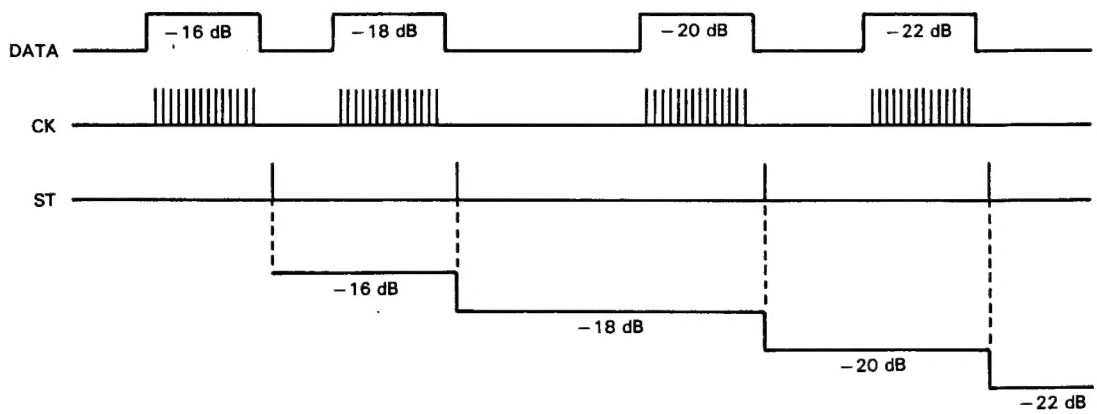
Desired attenuation data can be input to the TC9176P via the DATA, CK and ST terminals. This data consists of 20 bits.



For example, when a data (11001000001000000001) is input, the amount of attenuation is −22 dB.
Data bits 1 and 2 are used to select the L and R channels.
With the TC9176P, the 3rd bit is always "0".
Bits 4 to 8 sets the 2 dB step attenuator and bits 9 to 16 sets the 10 dB step attenuator.

(As the TC9176P is not provided with loudness control, the level of the 3rd bit is always "L".)

Bits 17 to 20 are chip select bits. With the TC9176P, selection is performed by (0001) and it is not operative with bits other than (0001).
−∞ attenuation refers to the data for −78 dB. Consequently, one step above −∞ is −76 dB.
All changes to newly input data are synchronized with the rises of ST signal.

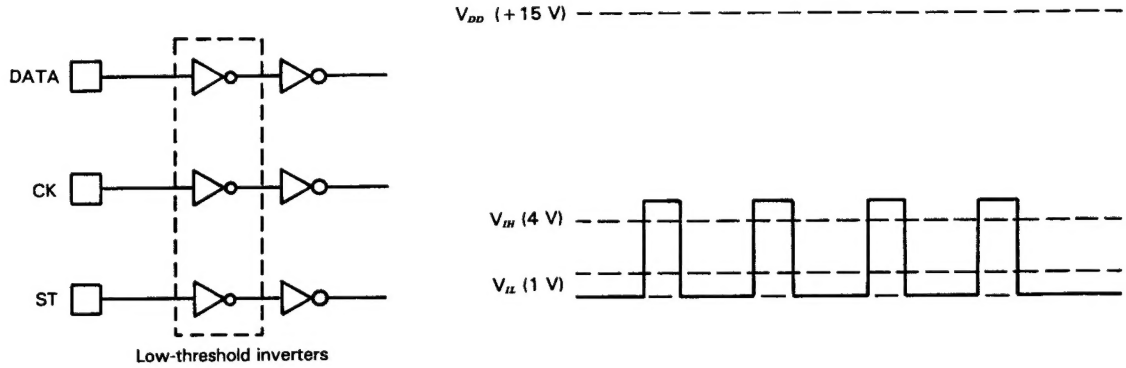


CIRCUIT DESCRIPTION

DATA, CK and ST inputs

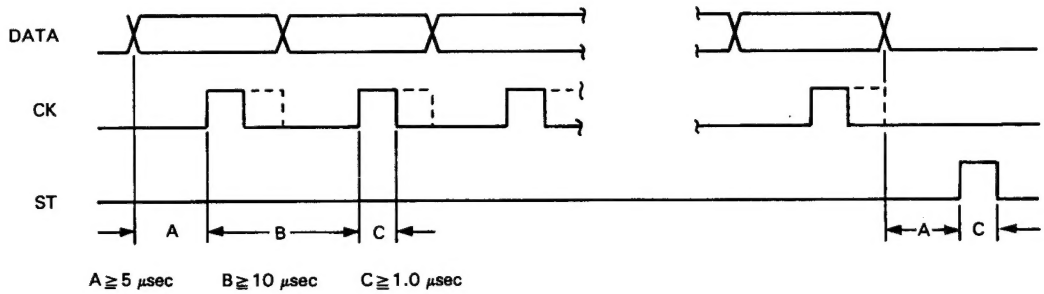
Although the TC9176P usually operates on two power supplies (+) and (−), the DATA, CK and ST inputs are operated only with the (+) power supply because it incorporates a level shifter.

The input inverters for these three input terminals have low input threshold voltages and operate on the 5 V logic level.



Low-threshold inverters

DATA, CK and ST are input at timings shown below.



A≧5 μsec B≧10 μsec C≧1.0 μsec

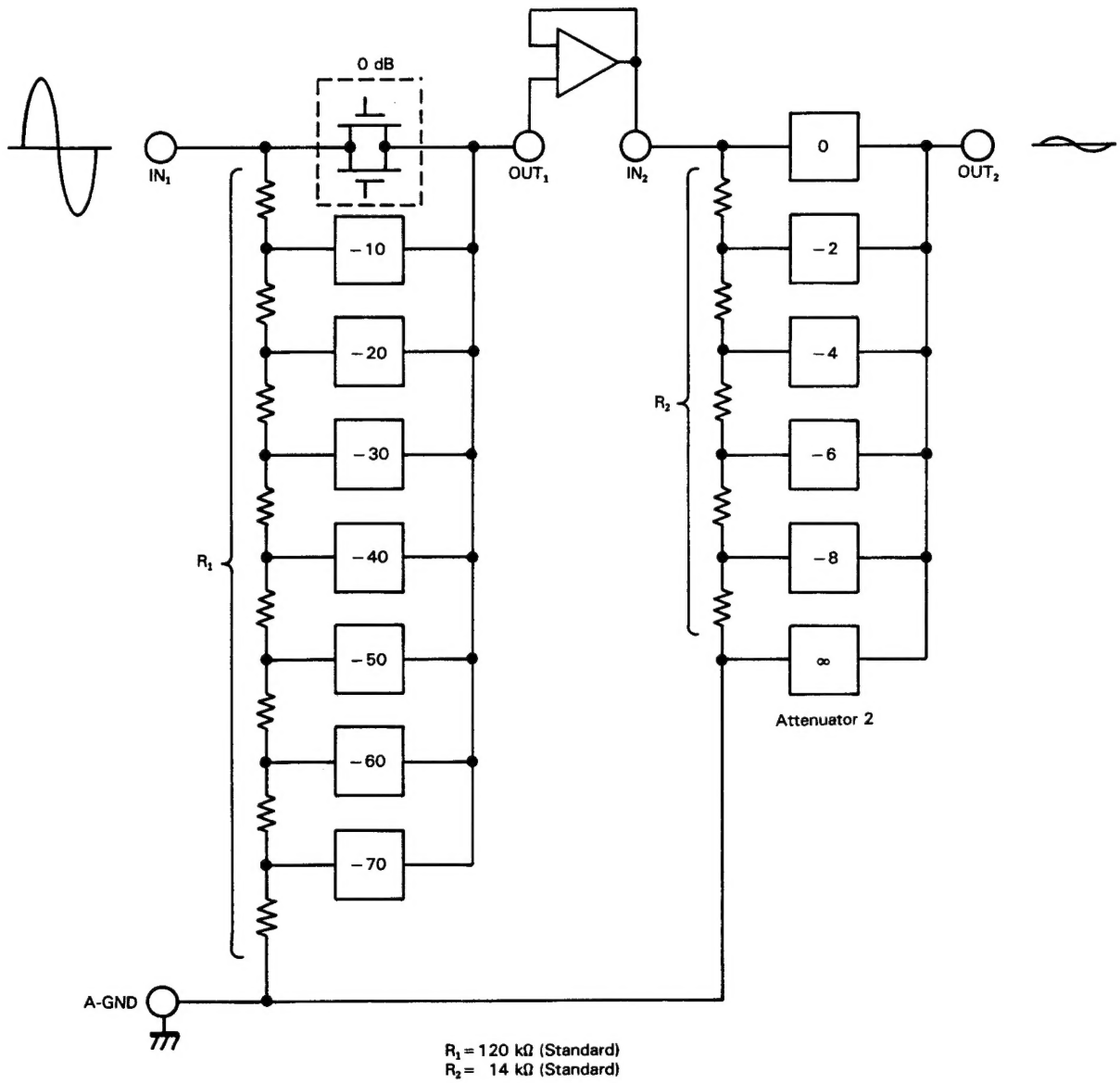
CIRCUIT DESCRIPTION

Attenuators

The attenuator section consists of diffused resistor arrays and analog switches.

Attenuator 1 allows attenuation from 0 to 70 dB in 10 dB steps and Attenuator 2 attenuation from 0 to 8 dB in 2 dB steps. Together, a total attenuation from 0 to 76 dB is possible in 2 dB steps.

Data Codes

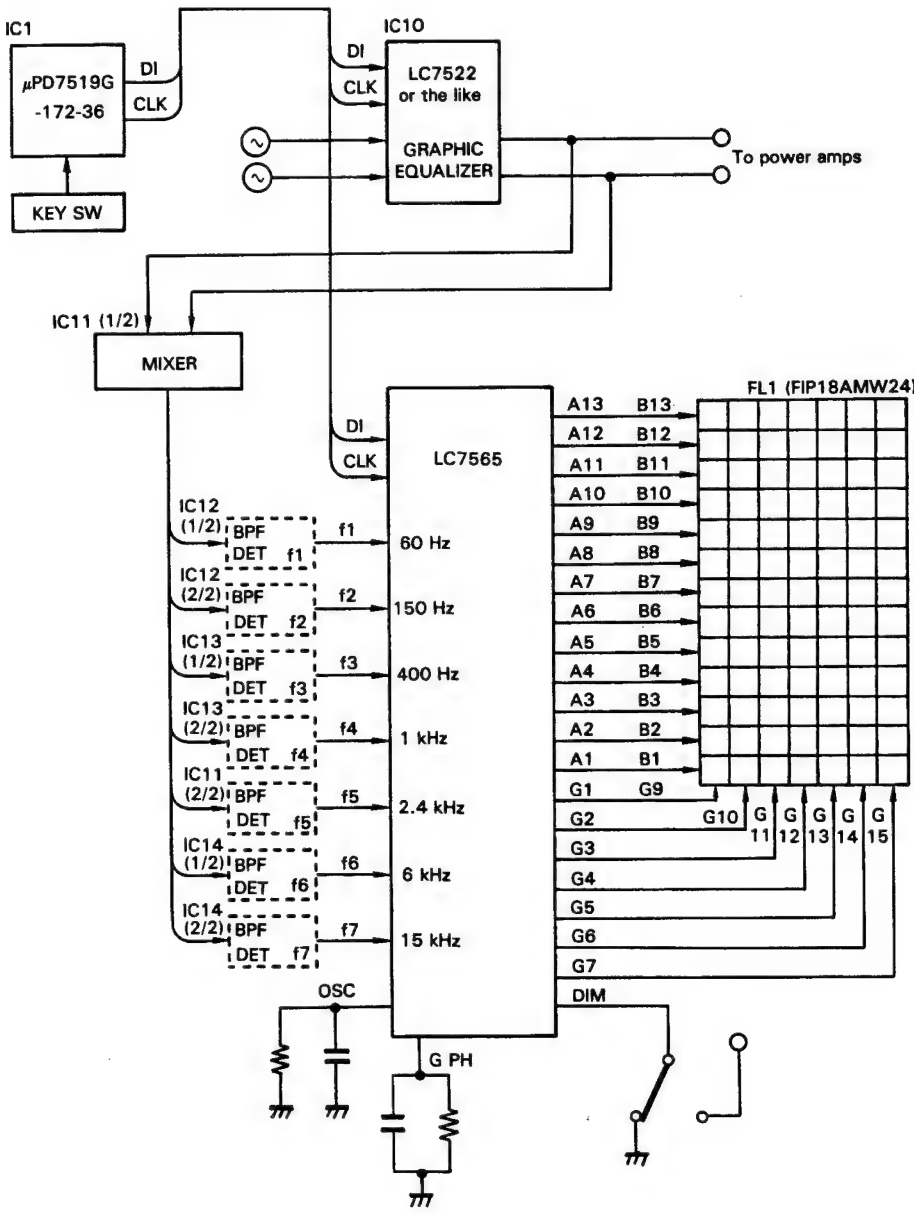


R_1 = 120 kΩ (Standard)
R_2 = 14 kΩ (Standard)

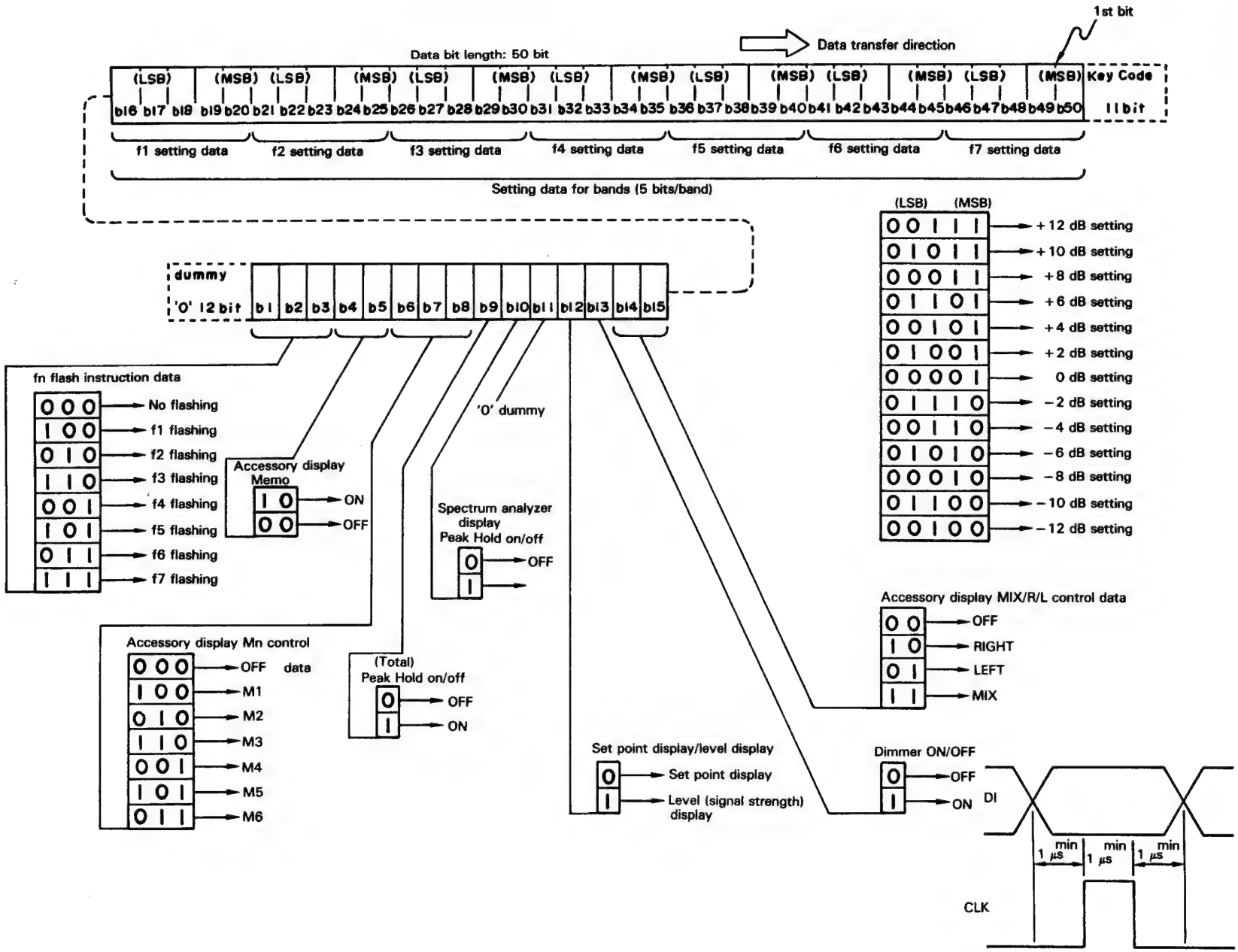
CIRCUIT DESCRIPTION

FLT Driver: IC 2 (LC7565)

Fluorescent display tube driver for display of graphic equalizer
LC7522

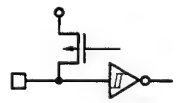


CIRCUIT DESCRIPTION



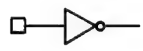
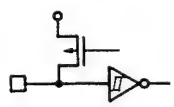
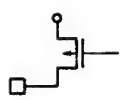
CIRCUIT DESCRIPTION

Description of terminals

Name	Pin No.	Type	Description
V_{DD}	42		• Power supply terminal, +5 V type.
V_{SS}	19		• Power supply terminal, GND.
DI	17		• CPU data input terminal • Schmitt inverter type
CLK	18		• CPU CLK signal input terminal • Schmitt inverter type
S1	15		• Selection terminal when more than one chip (max. 4 chips) are used.
S2	16		•

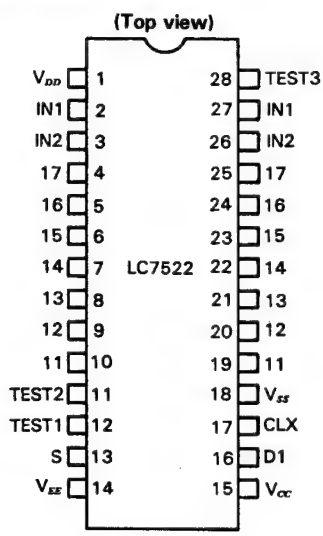
S2	S1	Key code										Last bit
1	1	1	1	1	1	1	0	0	1	0	1	1
1	0	1	1	1	1	1	0	0	1	0	1	0
0	1	1	1	1	1	1	0	0	1	0	0	1
0	0	1	1	1	1	1	0	0	1	0	0	0

Table S1 = S2 = "0"

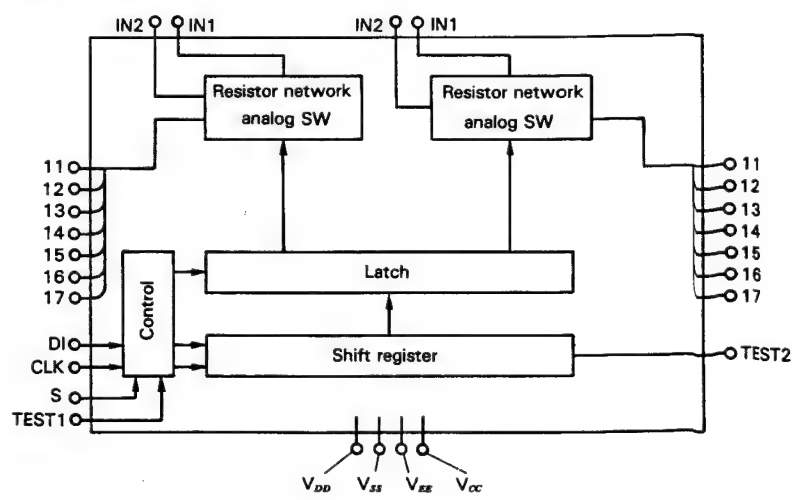
G.PH	21		• Connection terminal for C and R which determine the peak hold reset time of graphic equalizer's spectrum analyzer display
T.PH	22		• Connection terminal for C and R which determine the peak hold reset time of total display (Not connected)
DIM	32		• Terminal for direct drive of IC (when it is not controlled by the CPU) and for dimmer control • Dimmer ON by "1", OFF by "0"
f1 - f7, T	31 - 25 24		• Input terminal for audio signal rectifier voltage
OSC	20		• Open-drain type output buffer • Connection terminal for external C and R for the oscillator
A1 - A13	2 - 14		• Open-drain driver • Anode drive
G1 - G9	41 - 33		• Open-drain driver • Grid drive

Graphic equalizer; IC10 (LC7522)

Pin configuration

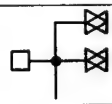


Block diagram

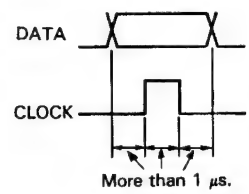


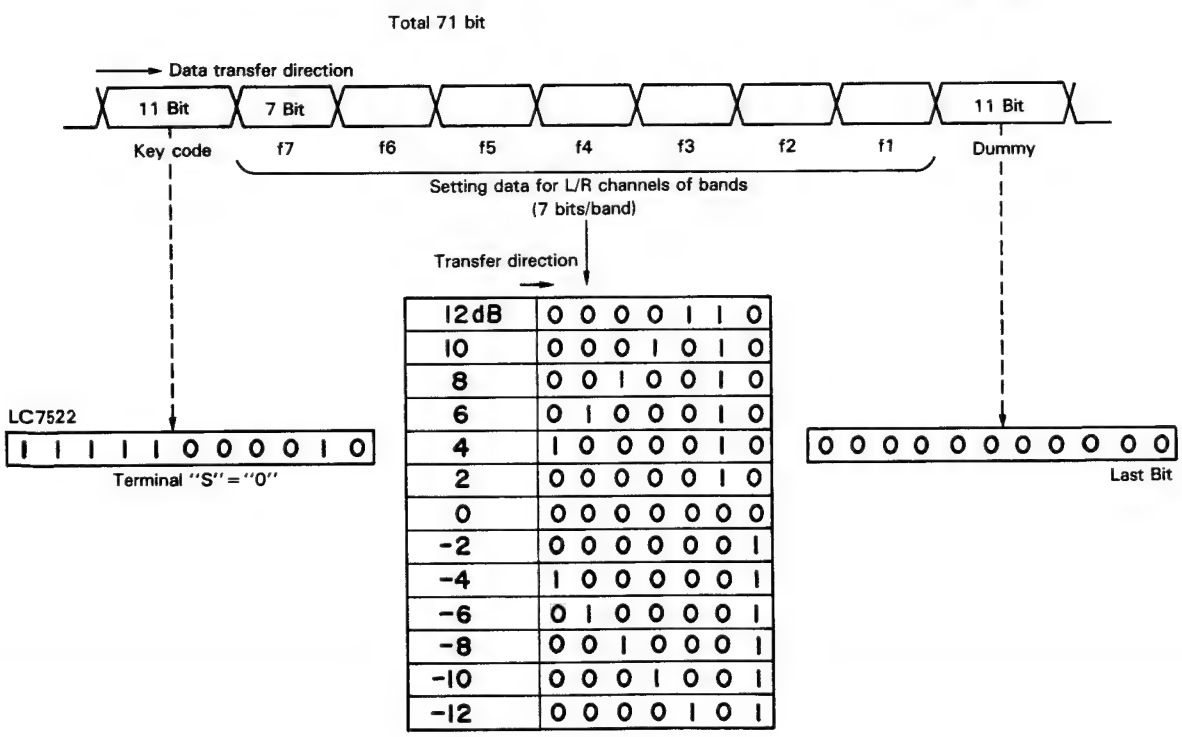
CIRCUIT DESCRIPTION

Description of terminals

Name	Type	Description
V_{DD} V_{SS}, V_{EE} V_{CC}		Power supply terminal +7 V (typ.) audio signal power supply Power supply terminal 0 V Power supply terminal +5 V (typ.)
DI		• CPU data input terminal • Schmitt inverter type
CLK		• CPU clock signal input terminal • Schmitt inverter type
IN1 IN2		• Audio signal input terminals • IN1 is normally connected with the inverted input of the op-amp. • IN2 normally connected with the non-inverted input of the op-amp. • Separately provided for L and R.
f1 - f7		• BPF connection terminals • f1 to f7 × L/R = Total 14 terminals
S		• Selection terminal for two-chip operation • Key code 7C2 with input "0" - Connected to V_{EE}
TEST1 TEST2 TEST3		• Terminals for IC internal testing • Set to GND

Data codes





12dB	0 0 0 0 1 1 0
10	0 0 0 1 0 1 0
8	0 0 1 0 0 1 0
6	0 1 0 0 0 1 0
4	1 0 0 0 0 1 0
2	0 0 0 0 0 1 0
0	0 0 0 0 0 0 0
-2	0 0 0 0 0 0 1
-4	1 0 0 0 0 0 1
-6	0 1 0 0 0 0 1
-8	0 0 1 0 0 0 1
-10	0 0 0 1 0 0 1
-12	0 0 0 0 1 0 1

CIRCUIT DESCRIPTION

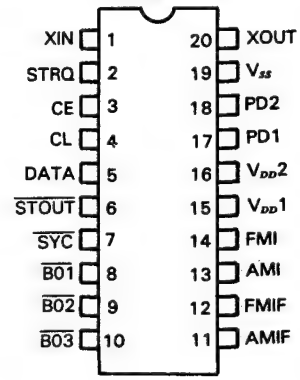
PLL Frequency synthesizer for electronic tuning; IC8 (LM7000)

Features

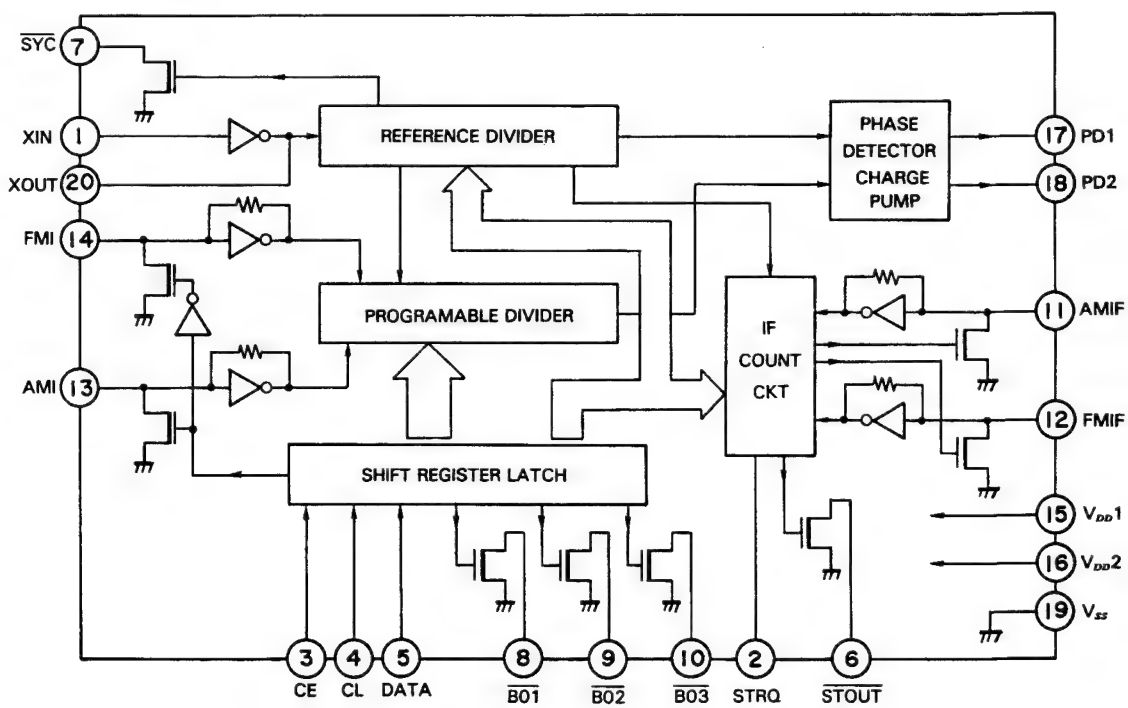
- High-speed program divider with possibility of direct dividing of FM band VCO.
- 7 reference frequencies: 100, 50, 25, 10, 9, 5 and 1 kHz
- Band switching output (3-bit)
- Clock output for controller (400 kHz)
- Timebase output for clock (8 Hz)
- Serial data input (via CE, CL and DATA terminals)
- IF counter circuit built in
  FM : ±10 kHz
  MW/SW : ±3 kHz
  LW : ±0.6 kHz

Pin configuration

LM7000
(Top View)



Equivalent circuit block diagram

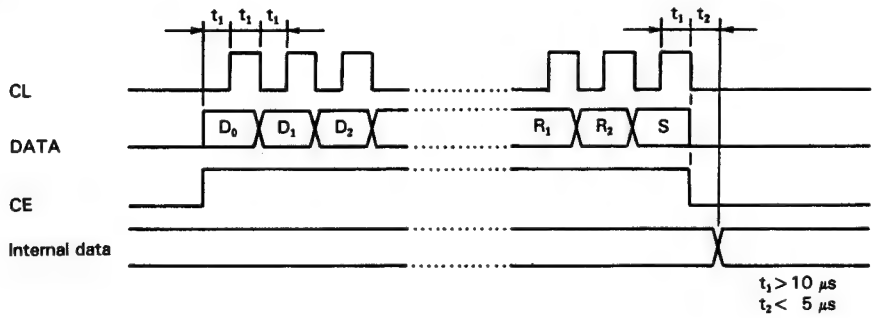


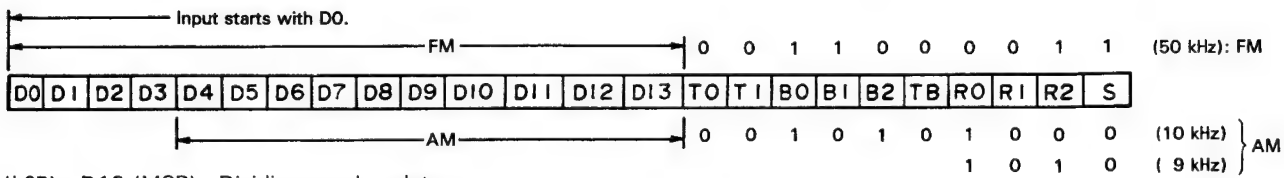
Description of terminals

SYC	:	Clock for controller (400 kHz)
XIN, XOUT	:	X'tal OSC (7.2 MHz) Feedback resistor attached externally
FMI, AMI	:	Local oscillator signal inputs
CE, CL, DATA	:	Data inputs
B01, B02, B03	:	Band data outputs B01 can be assigned for timebase output (8 Hz)
STRQ	:	IF counting request input
STOUT	:	Auto-search stop signal output
$V_{DD}1$, $V_{DD}2$, V_{SS}	:	Power supplies ($V_{DD}2$ is the backup power supply.)
AMIF, FMIF	:	IF signal inputs
PD1, PD2	:	Charge pump outputs

CIRCUIT DESCRIPTION

Data inputs





1) D0 (LSB) - D13 (MSB): Dividing number data:
FMI: D0/D13
AM1: D4/D13

2) T0, T1: For testing (0,0) of LSI.

3) B0 to B2, TB: Band data.
Timebase data

Input				Output		
B0	B1	B2	TB	$\overline{B01}$	$\overline{B02}$	$\overline{B03}$	
0	0	0	0	*	*	*	
0	0	1	0	0	0	1	
0	1	0	0	0	1	0	
0	1	1	0	0	1	1	
1	0	0	0	1	0	0	
1	0	1	0	1	0	1	←AM (9 kHz)
1	1	0	0	1	1	0	←FM (50 kHz)
1	1	1	0	1	1	1	
0	0	0	1	TB	*	*	
X	1	0	1	TB	1	0	
X	0	1	1	TB	0	1	
X	1	1	1	TB	1	1	

* : Determined by R0 to R2.
X : Either
TB : 8 Hz

4) R0 to R2: Reference frequency data

R0	R1	R2	fref	$\overline{B01}$	$\overline{B02}$	$\overline{B03}$	IF counting
0	0	0	100 kHz	1	1	0	10.7 MHz ±10 kHz
0	0	1	50 kHz	1	1	0	
0	1	0	25 kHz	1	1	0	
0	1	1	5 kHz	0	0	1	450 kHz±3 kHz
1	0	0	10 kHz	1	0	1	
1	0	1	9 kHz	1	0	1	
1	1	0	1 kHz	0	1	1	450 kHz±0.6 kHz
1	1	1	5 kHz	0	0	1	450 kHz±3 kHz

Note: When B0 to B2=0

5) S: Dividing select data
1: FM
0: AM

CIRCUIT DESCRIPTION

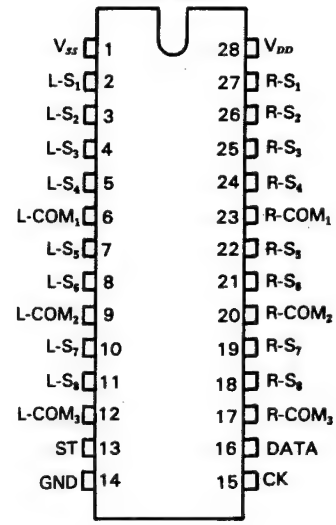
High-voltage resistant analog function switch array; IC2 (TC9164N)

The TC9164N is an analog switch array resistant to high voltages. Control of analog switches is possible by inputting specified serial data.

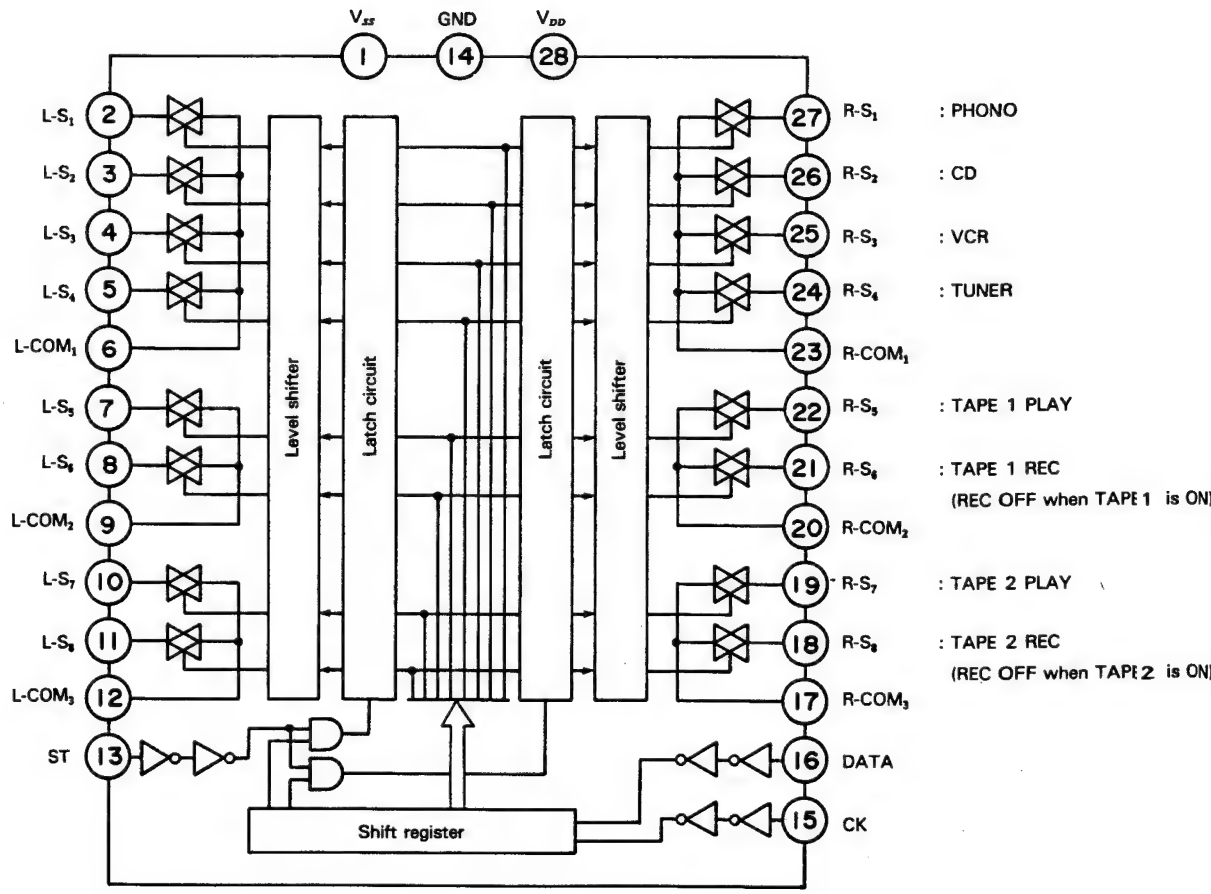
Analog switches can be controlled independently so the switch array can cover a wide range of operations according to its external connection.

Pin configuration

TC9164N
(Top view)



Block Diagram



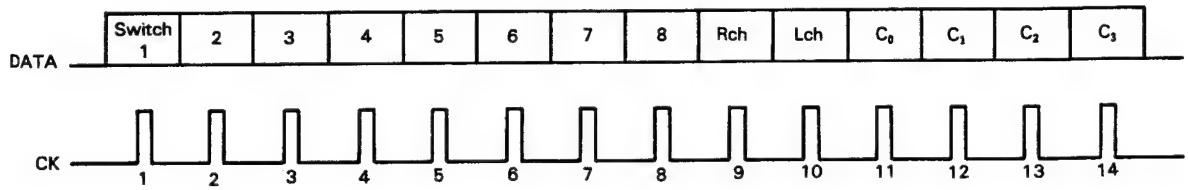
CIRCUIT DESCRIPTION

Operation description

Data input

Analog switches of the TC9164N can be controlled as desired by inputting specified data to the DATA, CK and ST terminals.

The data is composed of 14 bits and the composition is as shown below.



Bits 1 to 8 correspond to analog switches 1 to 8: Set the bits of the switches to turn ON to level "1".Bits 9 and 10 are the L/R channel selector bits: As channels can be selected by setting these bits to level "1", channels can be selected simultaneously ("1", "1") or independently ("1", "0" or "0", "1").

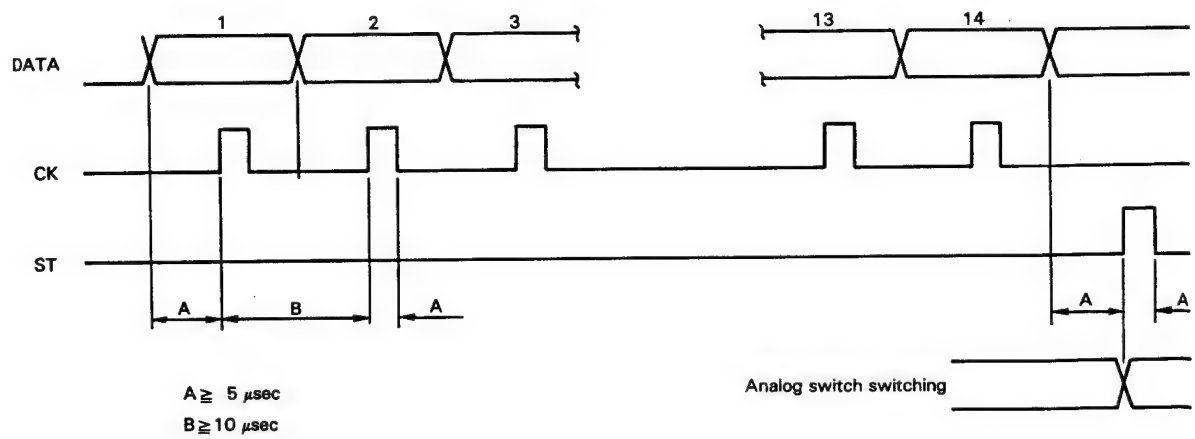
Bits 11 to 14 are code bits used for selecting chips.

Codes are specified as shown below.

	C_0	C_1	C_2	C_3
TC9164N	0	1	0	0

Timings of DATA, CK and ST

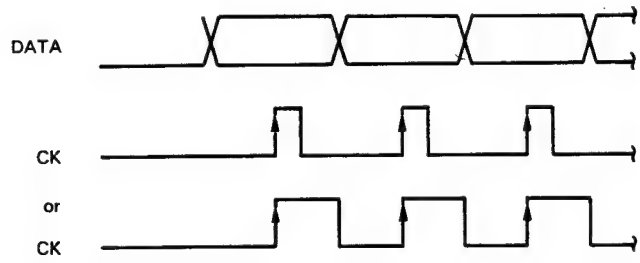
The DATA, CK and ST timings are input to the conditions shown below.

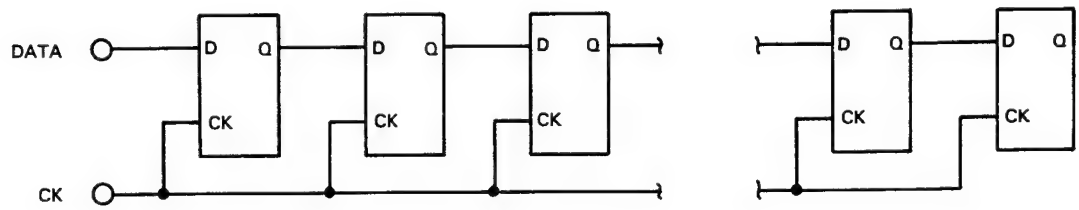


A ≧ 5 μsec
B ≧ 10 μsec

CIRCUIT DESCRIPTION

The DATA inputs are input in sequence to the internal shift register at the rises of the CK inputs.





The final ST signal is used to transfer the input data from the shift register to latch circuit, and data is updated from old data to new data.

CIRCUIT DESCRIPTION

Key matrix distribution

The key matrix uses the outputs obtained from the microprocessor's port outputs using 4 to 10 decoders (Q_0 -Q_9) and the microprocessor's output ports for the strobe signals, and four return signal ports are used to make the matrix.

OUTPUT \ INPUT	P10 (20)	P11 (21)	P12 (22)	P13 (23)
Q_0	0	4	8	FM
Q_1	1	5	9	AM
Q_2	2	6	DOWN	MEMORY
Q_3	3	7	UP	AUTO/MANUAL
Q_4	GE MEMORY	GE f4	**	GE A
Q_5	GE f1	GE f5	GE 1	GE B
Q_6	GE f2	GE f6	GE 2	GE DOWN
Q_7	GE f3	GE f7	GE 3	GE UP
Q_8	POWER	TAPE1	VOL DOWN	DIRECT
Q_9	PHONO	TAPE2	VOL UP	PRESET SCAN
P30 (59)	TUNER	VIDEO	BAL R	PRESET FUNCTION A/B
P31 (60)	AUX/CD	MUTE	BAL L	
P32 (61)	*REMOTE CONTROL or NOT	*(J) DESTINATION	*BAND 0	*BAND 1

- **Numbers inside ( ) are the pin Nos. of the microprocessor.**
- **Switches are momentary switches except those marked. * which are diode switches.**
- **KEY input levels are Active High.**
- ****EQ/ANALYZER ON/OFF SW; (Except KVR-A70R and KR-A70).**
  ****EQ/POWER LEVEL ON/OFF SW; (Except KVR-A90R)**

Description of key matrix

Functions of initial setting diode matrix

The initial setting diode matrix includes the following four types of data, which are read at the time of reset.

(1) Remote controlled or not

0: Not remote controlled. Resetting always leads to the power ON status.

1: Remote control function used. Resetting leads to the previous power status. The initial condition is the power OFF status.

(2) (J) destination

0: Destination is other than (J) so switches BAND0 and BAND1 are effective.

1: Destination is set for (J) so switches BAND0 and BAND1 are ineffective.

(3) BAND0, BAND1

Effective for models with destinations other than for (J), so that the FM and AM channel spaces can be set.

The reception conditions of different models with different destinations are shown below.

Band	Destination J	Band 0	Band 1	Reception Frequency Range	Channel Space	Reference Frequency	Intermediate Frequency
FM	0	0	—	87.5 ~ 108.0 MHz	100 kHz	50 kHz	10.7 kHz
	0	1	—	87.5 ~ 108.0 MHz	50 kHz	50 kHz	10.7 MHz
	1	—	—	76.0 ~ 90.0 MHz	100 kHz	50 kHz	−10.7 MHz
AM	0	—	0	530 ~ 1610 kHz	10 kHz	10kHz	450 kHz
	0	—	1	531 ~ 1602 kHz	9 kHz	9 kHz	450 kHz
	1	—	—	531 ~ 1602 kHz	9 kHz	9 kHz	450 kHz

CIRCUIT DESCRIPTION

- **Functions of momentary switches**

Symbols	Functions
POWER	Receiver system power supply ON/OFF key. Power ON/OFF is inverted each time this key is pressed and the POWER terminal (pin 13) is turned ON/OFF. At initial power switching (when the main power switch is set to ON after connecting the power plug), operation starts with the Power OFF status **(KVR-A90R/A70R)**, operation starts with the Power ON status **(KR-A70)**. The initial Power ON status condition is as follows. • Input selector: TUNER • Tuner condition : FM lowest value, MANUAL Tuning, all preset memories at the FM lowest value. • Volume : −56 dB • Balance : Center • Graphic equalizer memories: All flat = ±0 dB In the Power ON status, all keys (including remote control) are acceptable. In the power OFF status, only the POWER key is acceptable and other keys are not acceptable. After this, last statuses (statuses previous to switching power OFF) are recalled by the Power ON statuses. When the Input Selector was set to PHONO before switching power OFF, it becomes PHONO when power is next switched ON. When the volume was -40 dB, it also becomes −40 dB.
PHONO TUNER AUX/CD TAPE 1 VIDEO	Input selector keys. Pressing one of these keys switches the position and the input selector character display as shown below is displayed, except that frequency is displayed when TUNER is selected. The input selector key is invalid when the key the same as the current position is pressed. Muting signal (MUTE 1) is output during switching when the key operation is valid. TAPE 1 is treated as one of sources. The TAPE 1 REC switch is OFF in the TAPE 1 position and ON in other positions. PHONO CD TAPE 1 VIDEO
TAPE 2	TAPE 2 is initially set to MONITOR. Switching between SOURCE/MONITOR is possible using this key. Muting signal (MUTE 2) is output during switching. The TAPE 2's PLAY switch is OFF and REC switch is ON in SOURCE mode. The PLAY switch is ON and REC switch is OFF in MONITOR mode. The Input selector uses an analog function switch array IC TC9164N, the switch location of which is as shown below. (Refer to page 17)
VOL. UP VOL. DOWN	These are the audio volume UP/DOWN keys. The volume control is performed by electronic volume IC TC9176P, which is controlled by the microprocessor. The volume is variable in 40 2-dB steps by pressing the VOL. UP or VOL. DOWN key. (−∞, −76 to −0 dB) When power is switched ON, −56 dB is output as the initial value. The attenuation is increased or decreased by each press of the VOL. UP or VOL. DOWN key. When a key is held pressed for more than approx. 0.5 sec, the amount of attenuation is varied until the key is released at a speed of approx. 120 ms/step. However, the attenuation does not vary when the VOL. MAX value (−0 dB) is reached in UP operation or when the VOL. MIN value (−∞ dB) is reached in DOWN operation. The value of attenuation is displayed digitally during the VOL. UP/DOWN key operations. -38dB However, during direct input, auto-scanning and preset scanning, the frequency display is given priority and the value of attenuation is not displayed. The volume is also displayed permanently by the 11-point bar graph displays.
MUTE	The audio volume can be temporarily reduced by −20 dB from the current position by pressing this key. Setting and release of MUTING (−20 dB) is performed with this key and release is not possible even by switching power ON/OFF, etc. MUTING (−20 dB) is performed by electronic volume IC TC9176P which varies the output data. The MUTING (−20 dB) display blinks during this mode.
BAL R BAL L	These are the balance control keys. Each of the L and R keys internally has a 4-bit, 10-step counter, which counts up/down when the key is pressed. The electronic volume data is elaborated using the counter value and output to control electronic volume IC TC9176P. 21 balance positions are provided. Each press of the BAL R/L key shifts the balance position by one step. When a key is held pressed for approx. more than 0.5 sec, the positions are scanned at a speed of approx. 300 ms/step until it stops when the R or L end position is reached.
GE UP GE DOWN	These keys are used to set the boost, cut, etc. of the graphic equalizer. These keys are valid only when the graphic equalizer display is flashing after GE keys f1 (60 Hz)to f7 (15 kHz) have been operated. The graphic equalizer level can be varied in 13 2 dB steps between MAX. +12 dB and MIN. −12 dB. This operation is performed using graphic equalizer/ spectrum analyzer display IC LC7565 and graphic equalizer IC LC7522. Each press of a key varies the level of the graphic equalizer for the specified frequency band by 1 step. When the key is held pressed for approx. more than 0.5 sec, the level is varied UP or DOWN at a speed of 120 ms/step.

CIRCUIT DESCRIPTION

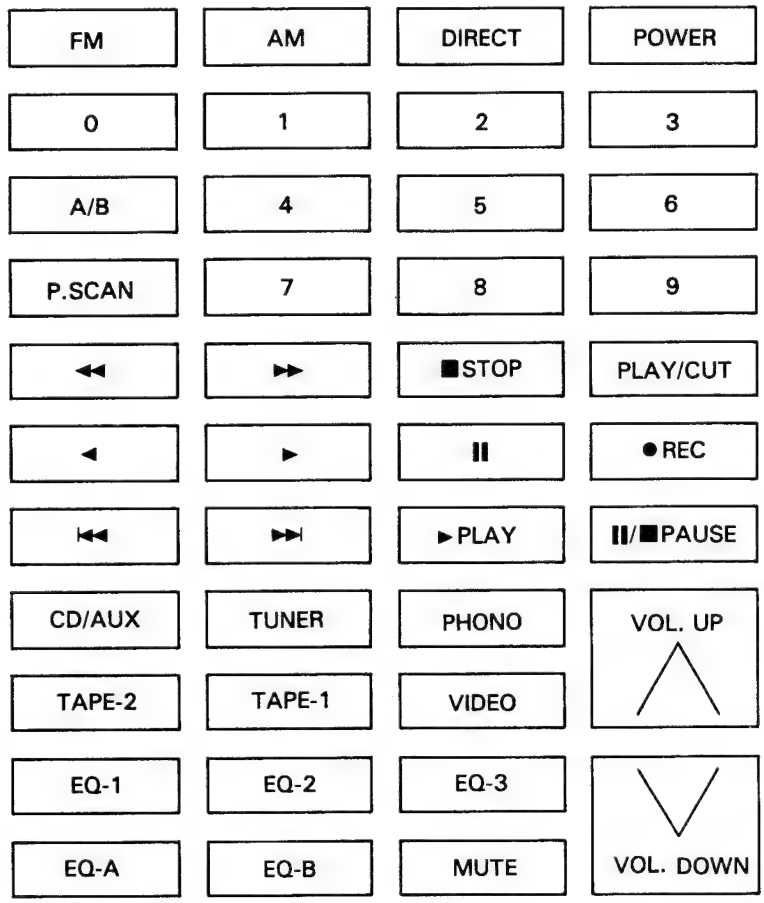
<table>
<tr><th>Symbols</th><th>Functions</th></tr>
<tr><td>GE f1 (60 Hz)
GE f2 (150 Hz)
GE f3 (400 Hz)
GE f4 (1 kHz)
GE f5 (2.4 kHz)
GE f6 (6 kHz)
GE f7 (15 kHz)</td><td>These keys are used to select the frequency bands of the graphic equalizer when setting its levels. When any of these keys is pressed, the display changes to the graphic equalizer display even during spectrum analyzer display, with the graphic equalizer display corresponding to the frequency band selected flashing to indicate that the graphic equalizer can be operated. If the GE UP or DOWN key is not pressed for approx. 5 seconds, flashing stops and the display is changed to the ordinary graphic equalizer display.</td></tr>
<tr><td>GE MEMORY</td><td>This key is used to write the graphic equalizer condition in the graphic equalizer memory. When this key is pressed, "MEMORY" lights, "◄" on the side of the GE 1 to 3 displays flashes, and graphic equalizer memory storage becomes possible.
This condition lasts for approx. 5 sec and the current graphic equalizer condition can be stored in the specified memory by pressing one of GE 1 to 3 keys during this period. This key is valid only during graphic equalizer display mode.</td></tr>
<tr><td>GE 1
GE 2
GE 3</td><td>These graphic equalizer preset keys correspond to the three programmable graphic equalizer memories and are used for write and read operations of graphic equalizer memories.
• For programming, press the GE MEMORY key, then press one of the GE 1 to 3 keys within approx. 5 sec (while "MEMORY" is lit and "◄" is flashing). The current graphic equalizer condition is written in the graphic equalizer memory corresponding to the key selected.
• For recalling, press one of the GE 1 to 3 keys. The corresponding graphic equalizer condition will be recalled.
In either cases, if normal display mode is set for the spectrum analyzer display, graphic equalizer display lasts for approx. 5 sec, after which the spectrum analyzer display resumes.</td></tr>
<tr><td>GE A
GE B</td><td>Used to recall the graphic equalizer's preset memories. Pressing one of these keys recalls the corresponding graphic equalizer condition.
The condition of the preset memories is as follows:
<table><tr><th>Frequency band
Preset memory</th><th>f1</th><th>f2</th><th>f3</th><th>f4</th><th>f5</th><th>f6</th><th>f7</th></tr><tr><td>GE A (Loudness)</td><td>+4dB</td><td>+2dB</td><td>±0dB</td><td>−2dB</td><td>−2dB</td><td>±0dB</td><td>+2dB</td></tr><tr><td>GE B (Presence)</td><td>+2dB</td><td>±0dB</td><td>−2dB</td><td>+2dB</td><td>+4dB</td><td>±0dB</td><td>−2dB</td></tr></table></td></tr>
<tr><td>Spectrum analyzer ON/OFF (EQ/ANALIZER) (KVR-A90R)</td><td>This key switches between the spectrum analyzer and graphic equalizer display modes. When the key is pressed, the spectrum analyzer display is changed to graphic equalizer display and graphic equalizer display is changed to spectrum equalizer display. The graphic equalizer operation ready status is released and changed to the spectrum display by this key. When the graphic equalizer display has been displayed by recalling a graphic equalizer memory, the condition before the recall is displayed; the graphic display is not changed when the previous condition was graphic display and is changed to spectrum analyzer display when the previous condition was spectrum analyzer display.</td></tr>
<tr><td>EQ/POWER LEVEL (KVR-A70R, KR-A70)</td><td>This key switches between the graphic equalizer and power level display modes.
When this key is pressed, the graphic equalizer display is changed to power level display and power level display is changed to graphic equalizer display. The graphic equalizer operation ready status is released and changed to the power level display by this key. When the graphic equalizer has been displayed by recalling a graphic equalizer memory, the condition before the recall is displayed; the graphic equalizer display is not changed when the previous condition was graphic equalizer display and is changed to power level display when the previous condition was power level display.</td></tr>
<tr><td>0, 1, 2,
3, 4, 5,
6, 7, 8, 9</td><td>Digit keys, preset channel memory programming keys and recall keys.
(1) Operation as digit keys.
Input the frequency using these keys in the direct frequency input operation.
(2) Operation as preset channel memory keys.
Each of these keys corresponds to two preset channel memories.
The two memories are distributed by the A and B preset functions.
• Programming
Within approx. 5 sec. of pressing the MEMORY key, select A or B using the Preset Function key, then press one of keys 0 to 9. The frequency being tuned in is programmed in the memory corresponding to the key pressed.
• Recalling
By combination of keys 0 to 9 and the Preset Function key, a preset memory corresponding to the selected keys is recalled.</td></tr>
</table>

CIRCUIT DESCRIPTION

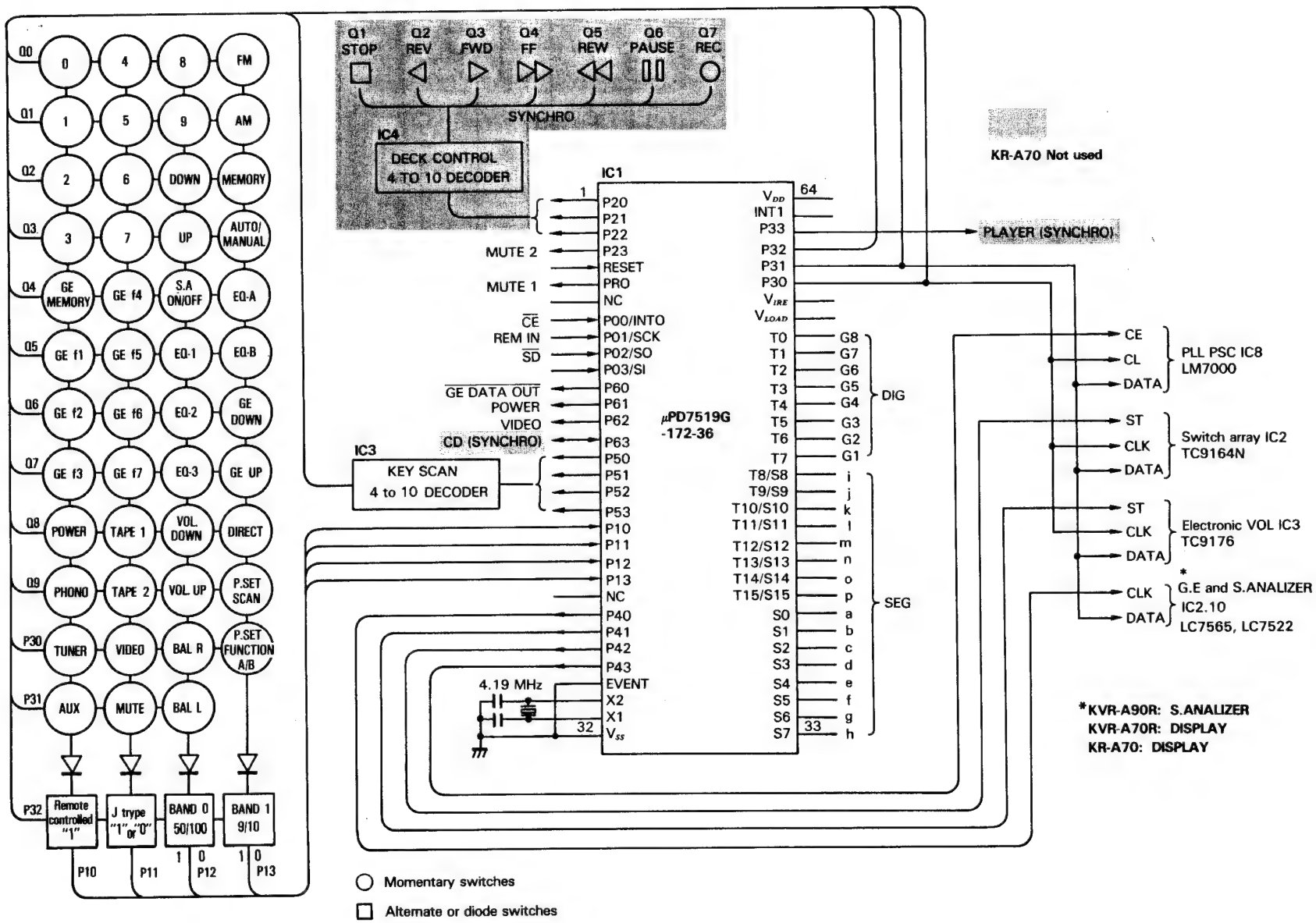
Symbols	Functions
UP DOWN	When these auto/manual tuning keys are pressed, the following operations are performed. These keys are valid only with the TUNER position of the Input Selector. (1) When the AUTO/MANUAL switch (Tuning mode) is set to AUTO, pressing the UP key scans the frequency upward in sawtooth wave mode and pressing the DOWN key scans it downward. When the input level at the SD terminal (pin 10) becomes Low at this time, frequnecy scanning is stopped and auto-tuning is stopped. (2) When the AUTO/MANUAL switch is set to MANUAL, pressing the UP or DOWN key changes the tuning frequency by one step (channel space) up or down. When a key is held depressed for more than approx. 0.5 sec, the frequency is scanned up/down at a speed of 125 ms/step until the key is released. At band edges, tuning is interrupted for approx. 0.5 sec.
FM AM	FM/AM band switching keys. When one of the keys is pressed, the reception band is switched to the corresponding band, at the last frequency, which is the frequency the unit was tuned in the last time the band was selected. This key is valid only in the TUNER position and is invalid when the key the same as the present band is pressed.
MEMORY	Used to program a new frequency in the preset channel memory. Within 5 sec of pressing this key, select A or B of the Preset Function key, then press one of the 10 digit keys so that the frequency being tuned in is programmed in the preset channel memory corresponding to the keys pressed. However, this key is valid only in the TUNER position.
AUTO/MANUAL	Tuning mode switching keys. The modes are alternated each time this key is pressed. When this key is pressed during auto-tuning, autotuning stops and the unit enters manual tuning mode. This key is valid only in the TUNER position.
PRESET FUNCTION A/B	Preset mode A/B switching key. Used in combination with 10 digit keys to program or recall a preset channel memory. This key is valid only in the TUNER position.
DIRECT	Direct frequency input mode selection key. To tune into a frequency by inputting its value with the 10 digit keys, first press this key, then input the frequency data using the 10 digit keys. This mode is released when no key has been operated for approx. 5 sec. This key is valid only in the TUNER position.
PRESET SCAN	Preset scanning operation key. Pressing this key scans preset channel memory to the next memory when a preset channel has presently been received, and starts preset channel memory scanning from Channel A-0 when a preset channel isnot being received presently. Channel A-9 is followed by B-0 and, after B-1, B-2, ... B-8, B-9 is followed by A-0. This keyis valid only in the TUNER position.

CIRCUIT DESCRIPTION

Functions of remote control keys (Except KR-A70)
Keys on the remote control unit are arranged as shown below. Almost all keys are found on the key matrix on the main body and have exactly the same functions as the keys on it. The remote control unit is also provided with operation keys for the tape deck, turntable and CD player connected to the receiver. Their functions are described below.

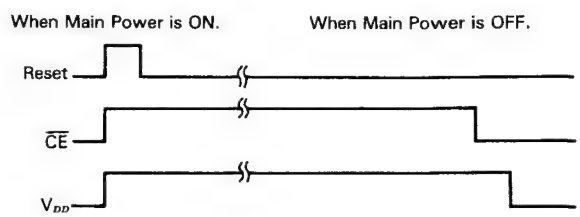


Symbols	Functions
PLAY/CUT	Turntable control key. Each press of this key reverses the High/Low level at the PLAYER terminal (pin 62). The turntable performs PLAY the operation at the rise and CUT operation at the fall of the pulse.
◄◄, ►► ◄►, IIPAUSE •REC, ■ STOP	Tape deck control keys. When one of these keys is pressed, the code for signal output is output from the terminal corresponding to the key. Refer to the "Description of terminals" relaed to pins 1 to 3.
⏮, ⏭ ►PLAY, II/■PAUSE	CD player control keys. Communication with the microprocessor of the CD player is performed via the CD terminal (pin 15) by pressing this key. Refer to the description on CD communication processing.


Q0 0 4 8 FM
Q1 1 5 9 AM
Q2 2 6 DOWN MEMORY
Q3 3 7 UP AUTO/ MANUAL
Q4 GE MEMORY GE f4 S.A ON/OFF EQ-A
Q5 GE f1 GE f5 EQ-1 EQ-B
Q6 GE f2 GE f6 EQ-2 GE DOWN
Q7 GE f3 GE f7 EQ-3 GE UP
Q8 POWER TAPE 1 VOL. DOWN DIRECT
Q9 PHONO TAPE 2 VOL UP P.SET SCAN
P30 TUNER VIDEO BAL R P.SET FUNCTION A/B
P31 AUX MUTE BAL L
P32 Remote controlled "1" J trype "1" or "0" BAND 0 50/100 BAND 1 9/10
P10 P11 1 0 P12 1 0 P13
Q1 STOP Q2 REV Q3 FWD Q4 FF Q5 REW Q6 PAUSE Q7 REC
SYNCHRO
IC4
DECK CONTROL 4 TO 10 DECODER
IC1
IC3
KEY SCAN 4 to 10 DECODER
μPD7519G -172-36
MUTE 2
MUTE 1
CE
REM IN
SD
GE DATA OUT
POWER
VIDEO
CD (SYNCHRO)
4.19 MHz
P20 P21 P22 P23 RESET PRO NC P00/INTO P01/SCK P02/SO P03/SI P60 P61 P62 P63 P50 P51 P52 P53 P10 P11 P12 P13 NC P40 P41 P42 P43 EVENT X2 X1 Vss
VDD INT1 P33 P32 P31 P30 VIRE VLOAD
T0 T1 T2 T3 T4 T5 T6 T7 T8/S8 T9/S9 T10/S10 T11/S11 T12/S12 T13/S13 T14/S14 T15/S15 S0 S1 S2 S3 S4 S5 S6 S7
G8 G7 G6 G5 G4 G3 G2 G1 i j k l m n o p a b c d e f g h
DIG
SEG
KR-A70 Not used
PLAYER (SYNCHRO)
CE CL DATA PLL PSC IC8 LM7000
ST CLK DATA Switch array IC2 TC9164N
ST CLK DATA Electronic VOL IC3 TC9176
CLK DATA * G.E and S.ANALIZER IC2.10 LC7565, LC7522
*KVR-A90R: S.ANALIZER
KVR-A70R: DISPLAY
KR-A70: DISPLAY
Momentary switches
Alternate or diode switches

CIRCUIT DESCRIPTION

Description of terminals: IC1 (μPD7519G-172-36) microprocessor

<table>
<tr><th>Pin No.</th><th>Symbols</th><th>I/O</th><th>Names</th><th>Functions</th></tr>
<tr><td>1 - 3</td><td>P20 - P22</td><td>0</td><td>TAPE DECK CONTROL OUT</td><td>Signals for tape deck control from the remote control unit. Tape deck control signals are generated by decoding signals from these three terminals. The IC4 (μPD4028BC) decoder is used and the connection between P20 to P22 and the decoder is:
P20 - A, P21 - B, P22 - C.
<table>
<tr><th>P22(C)</th><th>P21(B)</th><th>P22(A)</th><th>Terminal becoming High</th><th>Instruction to deck</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>None</td><td>None</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>Q_1</td><td>STOP (■)</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>Q_2</td><td>PLAY (◄)</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>Q_3</td><td>PLAY (►)</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>Q_4</td><td>FF (►►)</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>Q_5</td><td>REW (◄◄)</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>Q_6</td><td>PAUSE (❙❙)</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>Q_7</td><td>REC (●)</td></tr>
</table>
Instructions to the tape deck are sent when the decoder output terminal becomes High for 100 ms.</td></tr>
<tr><td>4</td><td>P23</td><td>0</td><td>MUTE2</td><td>Muting signal for switching TAPE2 between SOURCE/MONITOR. Normally Low and Active High.</td></tr>
<tr><td>5</td><td></td><td></td><td></td><td>Reset input terminal.</td></tr>
<tr><td>6</td><td>PPO</td><td>0</td><td>MUTE1</td><td>Muting signal for Input Selector switching and tuner. Normally Low and Active High.</td></tr>
<tr><td>7</td><td>NC</td><td></td><td></td><td></td></tr>
<tr><td>8</td><td>P00/INTO</td><td>I</td><td>CE</td><td>Backup detection terminal. Timing chart is as shown below.
 
</td></tr>
<tr><td>9</td><td>P01/$\overline{SCK}$</td><td>I</td><td>REM IN</td><td>Remote control signal input terminal (Active Low) to be connected with the output of μPC1474HA.
Remote control transmission IC μPD6102G is used.</td></tr>
<tr><td>10</td><td>P02/SO</td><td>I</td><td>$\overline{SD}$</td><td>Station detection signal in auto-tuning, etc.
High: No station.
Low : Station detected.</td></tr>
</table>

CIRCUIT DESCRIPTION

Description of terminals

Pin No.	Symbols	I/O	Names	Functions
11	P03/SI	I		Non-used input ports. Set either to Low or High level.
12	P60	O	$\overline{\text{GE DATA OUT}}$	Signal for preventing the P31 and P30 (key scan) signals, which are always output, being supplied to LC7522. This becomes Low only when data is written in LC7522 (GE IC).
13	P61	O	POWER	Power remote control output terminal (Active High). High (Power ON) and Low (Power OFF) are alternated each time the REMOTE POWER key is pressed.
14	P62	O	VIDEO	High in the VIDEO position, Low in other positions.
15	P63	I/O	CD	Port used for communication with the microprocessor of the CD player for its remote control.
16 - 19	P50 - P53	O		Output ports for the 4 to 10 decoder IC3 (μPD4028BC). Output key strobe signals.
20 - 23	P10 - P13	I		Key matrix return signal input terminals.
24	NC			
25	P40	O		CLK terminal control port used when writing data (with serial input) in the graphic equalizer IC (LC7522) or graphic equalizer/spectrum analyzer display IC (LC7565). Refer to the documents describing LC7522 and LC7565.
26	P41	O		Electronic volume IC (TC9176P) ST terminal control port. Normally High so that the P31 and P30 (key scan) signals, which are always output, are not supplied to TC9176P. Becomes Low only when writing data, after which the terminal level is raised. The ST signal is generated using this rise.
27	P42	O		Switch array IC (TC9167N) control port. Normally High so that the P31 and P30 (key scan) signals, which are always output, are not supplied to TC9164N. Becomes Low only when writing data, after which the terminal level is raised. The ST signal is generated using this rise.
28	P43	0		PLL IC (LM7000) CE terminal control port. Normally Low and High when writing data. Refer to the documents describing LM7000.
29	EVENT	I		Non-used input terminals. Set either to Low or High level.
30, 31	X2,X1			System clock signal oscillation terminal. 4.19 MHz.
32	Vss			GND terminal
33 - 40 41 - 48	S7 - S0 S15 - S8	0	SEG	FL display segment control terminals.
49 - 56	T1 - T	0	DIG	FL display digit control terminals.
57	V_{LOAD}			FL display drive power supply (−30 V).
58	V_{PRE}			Power supply for the pre-driver of FL display driver.
59	P30	0		• Key strobe signal terminal • CLK terminal for writing data (serial input) in LM7000, TC9164N, TC9176P, LC7522 and LC7565.

CIRCUIT DESCRIPTION

Description of terminals

Pin No.	Symbols	I/O	Names	Functions
60	P31	0		• Key strobe signal terminal. • DATA terminal for writing data (serial input) in LM7000, TC9164N, TC9176P, LC7522 and LC7565.
61	P32	0		Key strobe signal terminal
62	P33	0		Turntable remote control terminal. PLAY at rise and CUT at fall.
63	INT1	I		Non-used input terminal. Set either to Low or High level.
64	V_{DD}			Power supply terminal

Display tube drive

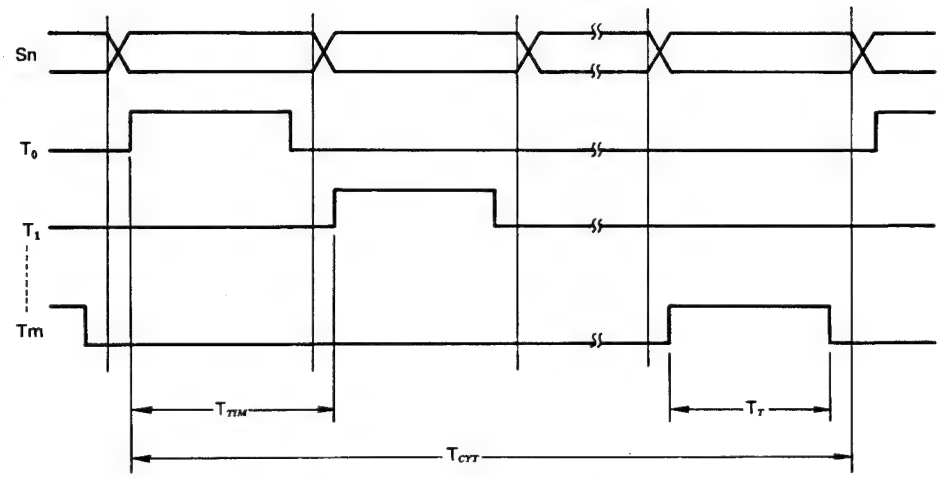
The display tubes use FIP18AMW24 and are driven by spectrum analyzer/graphic equalizer IC2 LC7565 and this microprocessor.

Refer also to the item describing the display tubes.

(1) Graphic equalizer/spectrum analyzer display section (9G to 15G)
Spectrum analyzer/graphic equalizer IC LC7565 is used.
The duty ratio is 1/11.4 and scanning frequency is determined by connecting a C and R to the IC. The IC drives directly the display which has 8 digits and 13 segments.

(2) Frequency and other item display section
This section is driven by the display output terminals of this microprocessor μPD7519G.

Waveforms of FIP display output



$T_{TIM} = \frac{1}{fxx} \times 512$ (= 122 μ/4.19 MHz) or $\frac{1}{fxx} \times 1024$ (= 244 μS/4.19 MHz)

T_T = Programmable (8 × 2 variations possible depending on the content of blanking mode register and T_{TIM})

$T_{CYT} = T_{TIM} \times (m + 1) m = 0 - 15$ (1 to 16 digits)

CIRCUIT DESCRIPTION

Display mode register DM = 7:	16 segment mode Timing signal Tn, Active High
Timing mode register TM = 7:	8-digit display
Blanking mode register BM = 5:	ϕFIP/2 operation Timing signal cut width 4/16
Clock frequency:	4.19 MHz

The following values can be read from the conditions above.

T_{TIM} = 244 μs
T_T = 183 μs
Blanking frequency = 61 μs
T_{CYT} = 1952 μs
Scanning frequency = 512 Hz
Duty = 1/10.67

Although display tubes are normally driven directly, direct drive of 1G, 2G, 6G, 7G and 8G from the display terminal is not possible because the current is insufficient due to the wide surface of the grids. A driver buffer is added for them.

REGLAGES

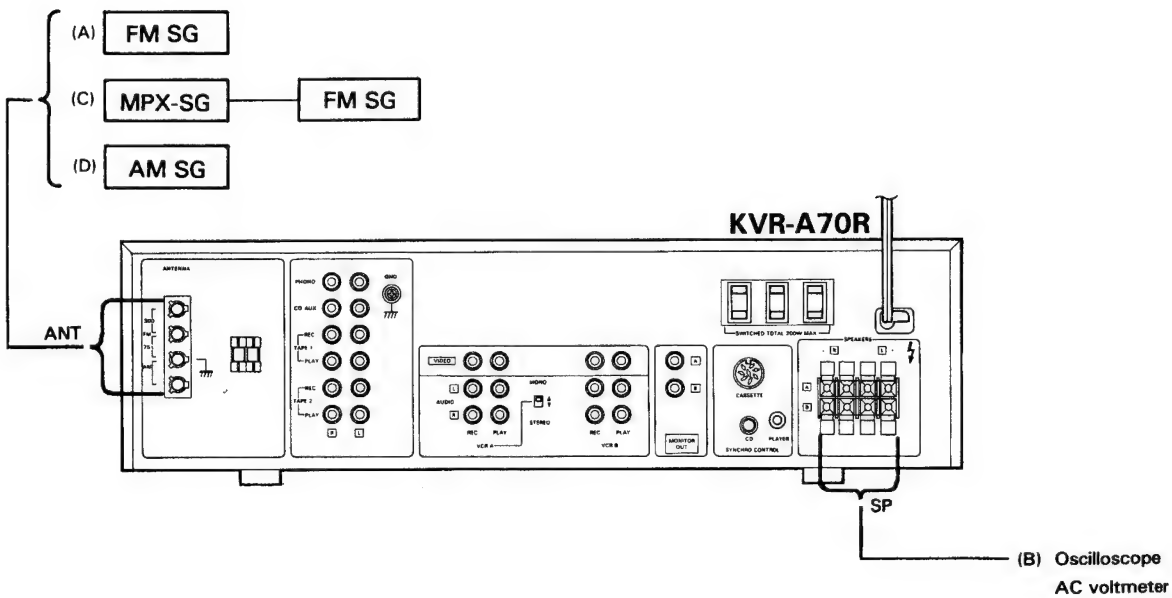
N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF		Sauf en cas d'indications spéciales, régler chaque commutateur comme suit: SELECTEOR: FM MODE: AUTO					
1	BORD DE BANDE (1)	—	Connecter un voltmètre CC entre les TP8 et TP9.	87,5MHz	(X86-101) L8	2,5V	(a)
2	BORD DE BANDE (2)	—	Connecter un voltmètre CC entre les TP8 et TP9.	108MHz	(X86-101) TC1	8,0V	(a)
		Répéter les points 1 et 2 plusieurs fois.					
3	ALIGNEMENT HT	(A) 98,0MHz 1kHz.±75kHz dév	(B)	MODE: MONO 98,0MHz	(X86-101) L2.4 (L5)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
4	DISCRIMINATEUR (1)	(A) 98,0MHz 1kHz.±75kHz dév 60dB(Entrée ANT)	Connecter un voltmètre CC entre les TP11 etTP12.	MODE: MONO 98,0MHz	(X14-178) T1	0 V	(b)
5	DISCRIMINATEUR (2)	(A) 98,0MHz 1kHz.±75kHz dèv 60dB(Entrèe ANT)	(B)	MODE: MONO 98,0MHz	(X14-178) T2	Distorsion minimale.	
6	VCO	(A) 98,0MHz 0 dév 60dB(Entrée ANT)	Connecter une résistance de 330kΩ à TP13. Racorder un compteur de fréquence à une résistance par l'intèrmediaire d'un voltmètre CA.	98,0MHz	(X14-178) VR2	76,00kHz	(c)
7	DISTORSION (STEREO)	(C) 98,0MHz 1kHz.±68,25kHz dév Selection:G ou D Signal pilote: ±6,75kHz dév 60dB(Entrée ANT)	(B)	98,0MHz	(X86-101) L7	Distorsion minimale.	
8	SEPARATION (E type)	(C) 98,0MHz 1kHz.±40kHz dèv Selection:G ou D Signal pilote: ±6kHz dèv 60dB(Entrèe ANT)	(B)	98,0MHz	(X14-178) VR3	Diaphone minimale.	
SECTION MA		Laisser l'antenne bouche MA installée. SELECTEOR: AM					
(1)	BORD DE BANDE	—	Connecter un voltmètre CC entre les TP72 et TP73.	530kHz (531kHz)	(X14-178) L4	1,5V	(a)
(2)	BORD DE BANDE	—	Connecter un voltmètre CC entre les TP72 et TP73.	1610kHz (1602kHz)	(X14-178) TC2	8,0V	(a)
		Répéter les points (1) et (2) plusieurs fois.					
(3)	ALIGNEMENT HT (1)	(D) 600kHz 400Hz.30% mod	(B)	600kHz	(X14-178) L5	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(4)	ALIGNEMENT HT (2)	(D) 1400kHz 400Hz.30% mod	(B)	1400kHz	(X14-178) TC1	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
		Répéter les points (3) et (4) plusieurs fois.					
SECTION AUDIO							
①	REGLAGE DU COURANT DE POLARISATION	—	Connecter un voltmètre CC sur CP1 (CP2).	VOLUME:-∞	(X14-222) VR1 (G) VR2 (D)	18mV	(e)

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG		Außer wenn anders angegeben, die verschiedenen Schalter wie folgt einstellen: SELECTOR: FM MODE: AUTO					
1	BANDKANTE (1)	–	Einen Gleichspannungsmesser zwischen TP8 und TP9 anschließen.	87,5MHz	(X86-101) L8	2,5V	(a)
2	BANDKANTE (2)	–	Einen Gleichspannungsmesser zwischen TP8 und TP9 anschließen.	108MHz	(X86-101) TC1	8,0V	(a)
		Abstimmungen 1 und 2 mehrere Male wiederholen.					
3	EMPFANGS-BEREICH-ABSTIMMUNGEN	(A) 98,0MHz 1kHz.±75kHz Hub	(B)	MODE: MONO 98,0MHz	(X86-101) L2.4 (L5)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
4	DISKRIMINATOR (1)	(A) 98,0MHz 1kHz.±75kHz Hub 60dB(ANT-Eingang)	Einen Gleichspannungsmesser zwischen TP11 und TP12 anschließen.	MODE: MONO 98,0MHz	(X14-178) T1	0 V	(b)
5	DISCRIMINATOR (2)	(A) 98,0MHz 1kHz.±75kHz Hub 60dB(ANT-Eingang)	(B)	MODE: MONO 98,0MHz	(X14-178) T2	Minimaler Klirrfaktor.	
6	SPANNUNGS-GEREGELTER OSZILLATOR	(A) 98,0MHz 0 Hub 60dB(ANT-Eingang)	Einen 330kΩ Widerstanden zu TP13 anschließen. Einen Frequenzzähler über einen Wechselspannungsmesser an den Widerstand anschließen.	98,0MHz	(X14-178) VR2	76,00kHz	(c)
7	KLIRRFAKTOR (STEREO)	(C) 98,0MHz 1kHz.±68,25kHz Hub Wähler:L oder R Pilotten: ±6,75kHz Hub 60dB(ANT-Eingang)	(B)	98,0MHz	(X86-101) L7	Minimaler Klirrfaktor.	
8	STEREO KANAL TRENNUNG (E type)	(C) 98,0MHz 1kHz.±40kHz Hub Wähler:L oder R Pilotten: ±6kHz Hub 60dB(ANT-Eingang)	(B)	98,0MHz	(X14-178) VR3	Minimales Übersprechen.	
MW-EMPFANGSABTEILUNG		Die MW-Rahmenantenne angebracht lassen. SELECTOR: AM					
(1)	BANDKANTE (1)	–	Einen Gleichspannungsmesser zwischen TP8 und TP9 anschließen.	530kHz (531kHz)	(X14-178) L4	1.5V	(a)
(2)	BANDKANTE (2)	–	Einen Gleichspannungsmesser zwischen TP72 und TP73 anschließen.	1610kHz (1602kHz)	(X14-178) TC2	8.0V	(a)
		Abstimmungen (1) und (2) mehrere Male wiederholen.					
(3)	HF-ABGLEICH (1)	(D) 600kHz 400Hz.30% mod	(B)	600kHz	(X14-178) L5	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(4)	HF-ABGLEICH (2)	(D) 1400kHz 400Hz.30% mod	(B)	1400kHz	(X14-178) TC1	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
		Abstimmungen (3) und (4) mehrere Male wiederholen.					
AUDIO-EMPFANGSABTEILUNG							
①	LEERLAUFSTROM	–	Einen Gleichspannungsmesser über CP1(CP2) anschließen.	VOLUME: -∞	(X07-222) VR1 (L) VR2 (R)	18mV	(e)

ADJUSTMENT/REGLAGES/ABGLEICH

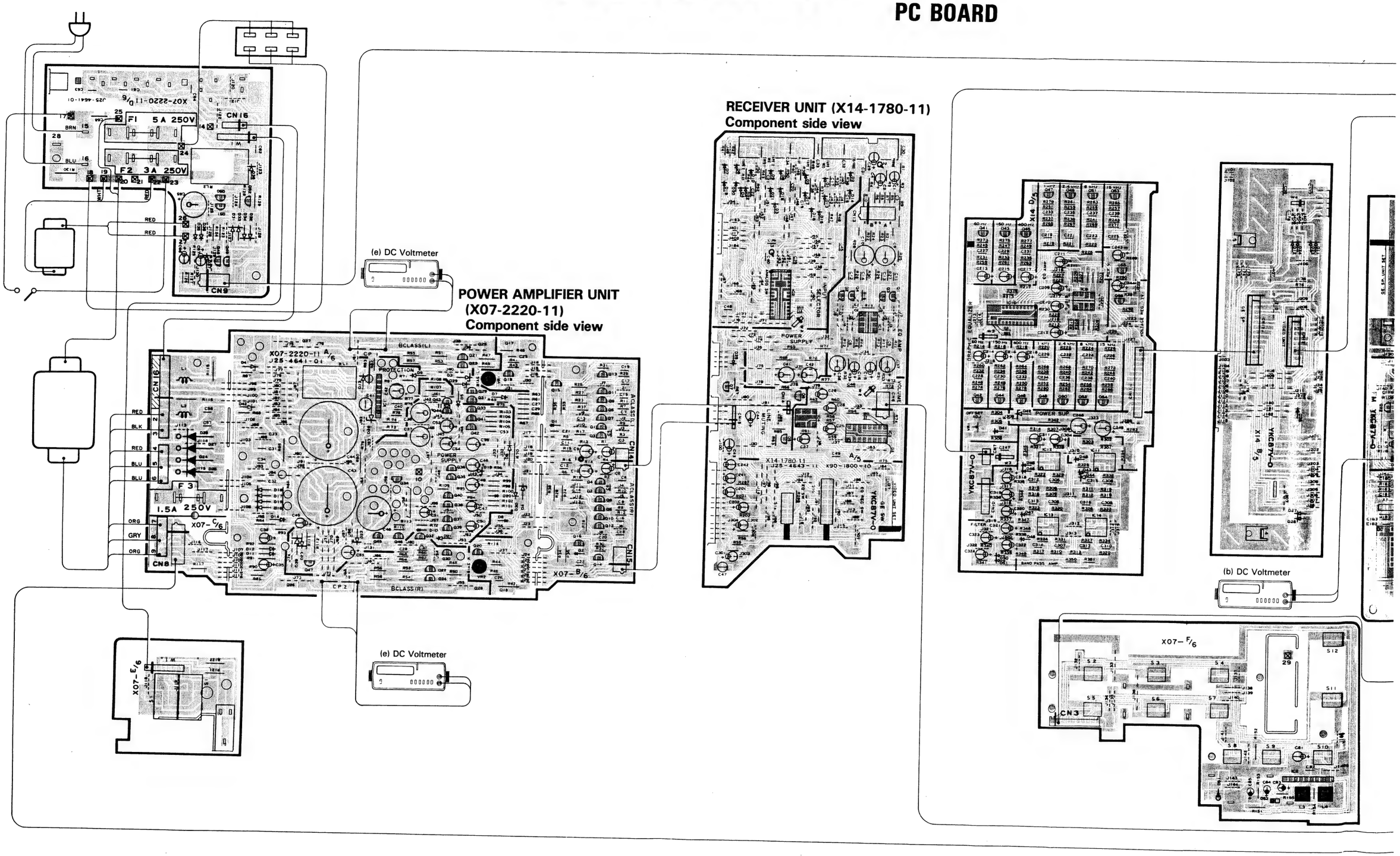
TEST INSTRUMENT	APPAREILLAGE	PRÜFINSTRUMENTE	
Oscilloscope	Oscilloscope	Oszilloskop	SCOPE
AM signal generator	Générateur MA	MW-Signalgenerator	AM-SG
FM signal generator	Générateur MF	UKW-Signalgenerator	FM-SG
SDK signal generator	Générateur SDK	SDK-Signalgenerator	SDK-SG
Audio generator	Génerateur audio fréquences	NF-Signalgenerator	AG
AC voltmeter	Voltmètre CA	Wechselspannungsmesser	
FM multiplex generator	Générateur multiplex stéréo	UKW-Multiplexgenerator	FM-MPX
Frequency counter	Fréquencemètre	Frequenzzähler	
DC voltmeter	Voltmètre CC	Gleichspannungsmesser	
Distortion meter	Distorsiomètre	Klirrfaktomesser	
Dummy antenna	Antenne fictive	Antennennachbildung	



PC BOARD

RECEIVER UNIT (X14-1780-11)
Component side view

POWER AMPLIFIER UNIT
(X07-2220-11)
Component side view



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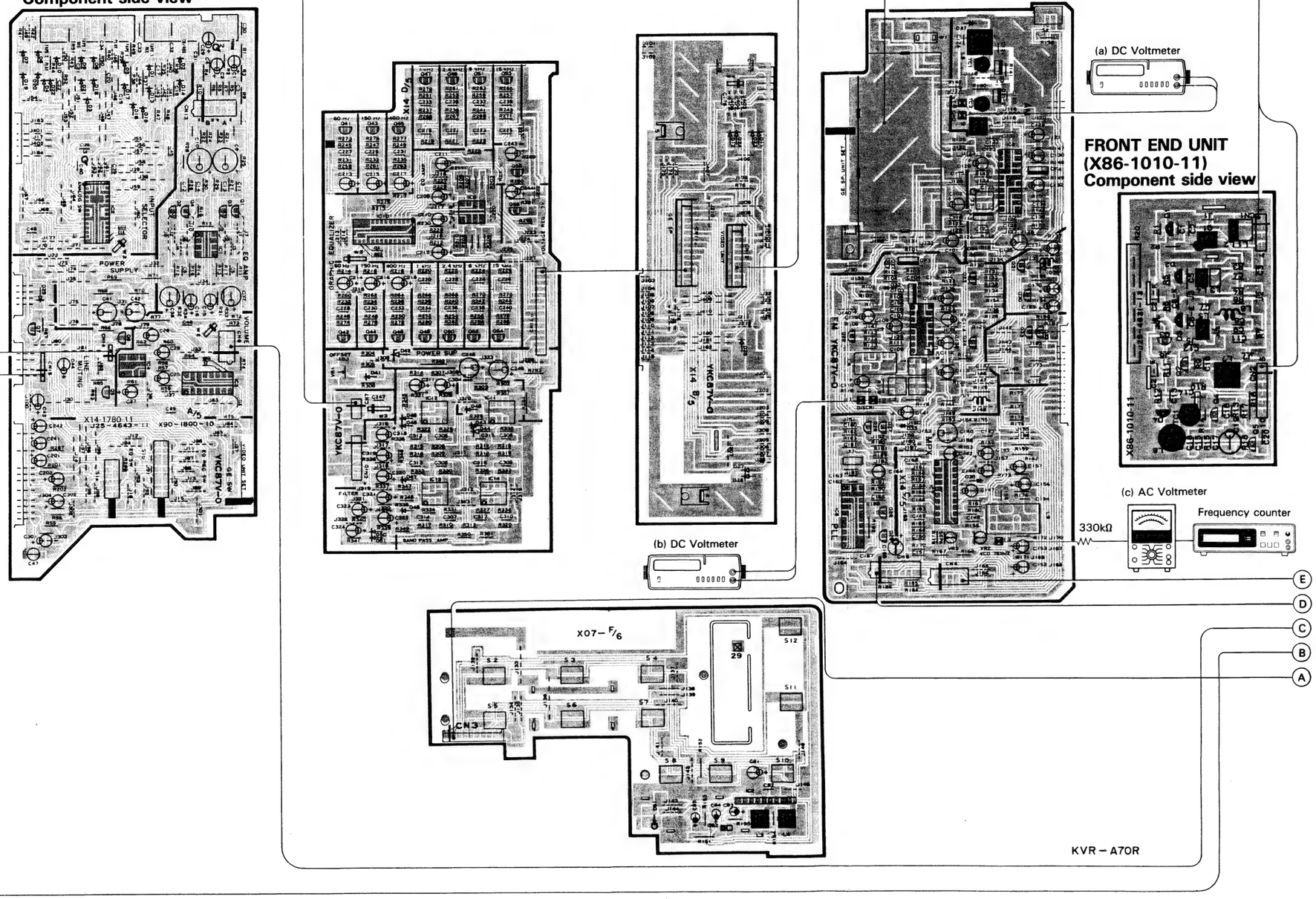
PC BOARD

RECEIVER UNIT (X14-1780-11)
Component side view



X86-1010-10

Q1

S	–
D	95V
G	–

Q2

E	1.1V
C	–
B	–

Q4

E	4.0V
C	–
B	–

Q5

E	0V
C	7.4V
B	–

CN2

5	0V
7	10.3V
9	0V

X14-1780-11 (A/5)

IC1,4

4	−14V
8	13.4V

IC2

1	−14V
14	0V
28	13.4V

IC3

1	−14V
4	0V
7	
13	
16	13.4V

CN15

1	−14V
2	0V
3	5V
4	14V

X14-1780-11 (B/5)

CN11a

10	−14V
12	5V
13	14V

X14-1780-11 (C/5)

IC5

1	2.7V
2	
3	
4	0V
5	2.4V
6	5.6V
7	
8	
9	
10	
11	11.0V
12	4.9V
13	1.0V
14	0V
15	4.9V
16	0.4V

IC6

1	5.6V
2	2.1V
3	2.7V
4	0V
5	8.4V
6	2.0V
7	9.3V
8	
9	2.7V
10	7.8V
11	0.7V
12	0V
13	2.1V
14	11.6V
15	1.5V
16	0.3V
17	2.1V
18	5.6V
19	
20	2.9V

IC7

1	10.1V
2	4.4V
3	4.5V
4	0.3V
5	0V
6	FM: 0V AM: 6.0V
7	4.4V
8	4.2V
9	4.4V
10	4.2V
11	3.7V
12	0V
13	4.6V
15	2.4V
16	2.2V
17	
18	2.4V
19	
20	4.0V

IC8

1	1.6V
2	0V
7	0V
8	0.8V
9	FM:12.5V, AM:0.5V
10	FM:0.5V, AM:12.5V
11	
12	FM:0.5V, AM:12.5V
19	
13	FM:2.7V, AM:0V
14	
15	0V
16	
20	1.0V

Q26

E	AM: 12.4V
C	FM: 12.4V
B	–

Q27

E	AM: 12.4V
C	–
B	–

Q30

E	12.6V
C	13.3V
B	–

Q31

E	5.6V
C	12.6V
B	–

X14-1780-11 (D/5)

IC9

4	−14V
8	12.9V

IC10

1	12.9V
2 / 10	4.1V
11 / 14	0V
15	5.5V
18	0V
19 / 27	4.1V
28	0V

Q41 – 56

E	–
C	12.9V
B	–

X07-2220-11 (A/6)

Q21,22,25,26

E	–
C	45V
B	–

Q23,24,27,28

E	–
C	−45V
B	–

Q34

E	13.5V
C	20V
B	–

Q35

E	–
C	20V
B	–

Q36

E	12.9V
C	–
B	13.5V

Q37

E	5.5V
C	13.5V
B	–

Q38

E	–
C	13.5V
B	–

Q42

E	−14V
C	–
B	–

Q43

E	–
C	−14V
B	–

Q47

E	−28V
C	–
B	–

Q45,46

E	–
C	−19V
B	–

X07-2220-11 (B/6)

Q5,6,7,8

E	12.5V
C	–
B	–

CN15

1	14V
2	5V
3	0V
4	−14V

X07-2220-11 (D/6)

Q48

E	5.5V
C	–
B	–

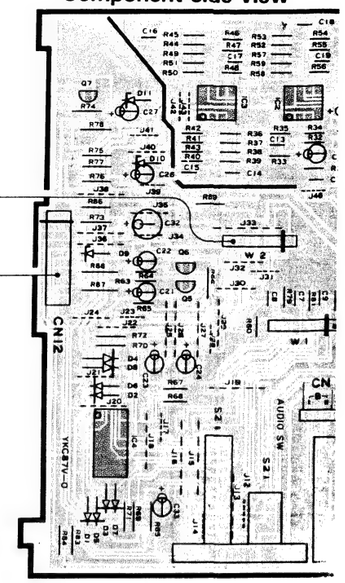
CN9

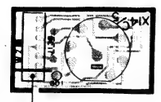
1	5V
5	0V

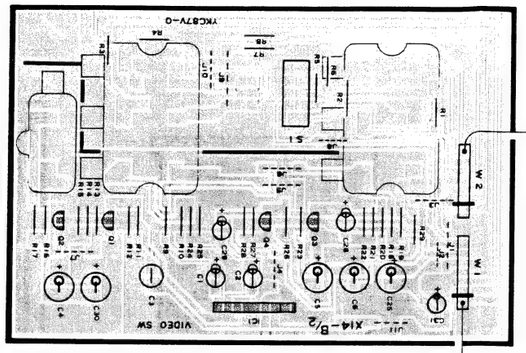
Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

PC BOARD

VIDEO CONTROL UNIT (X
Component side view







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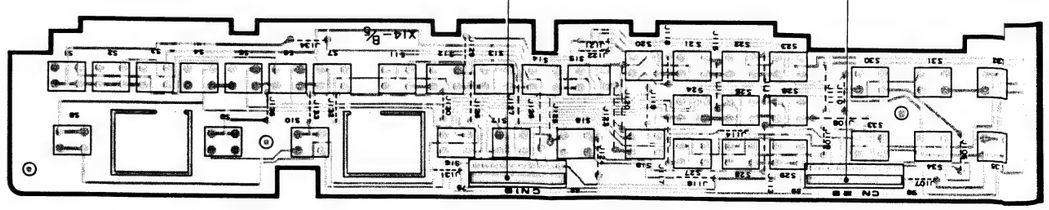
DISPLAY UNIT
(X14-1770-11)

Component side view

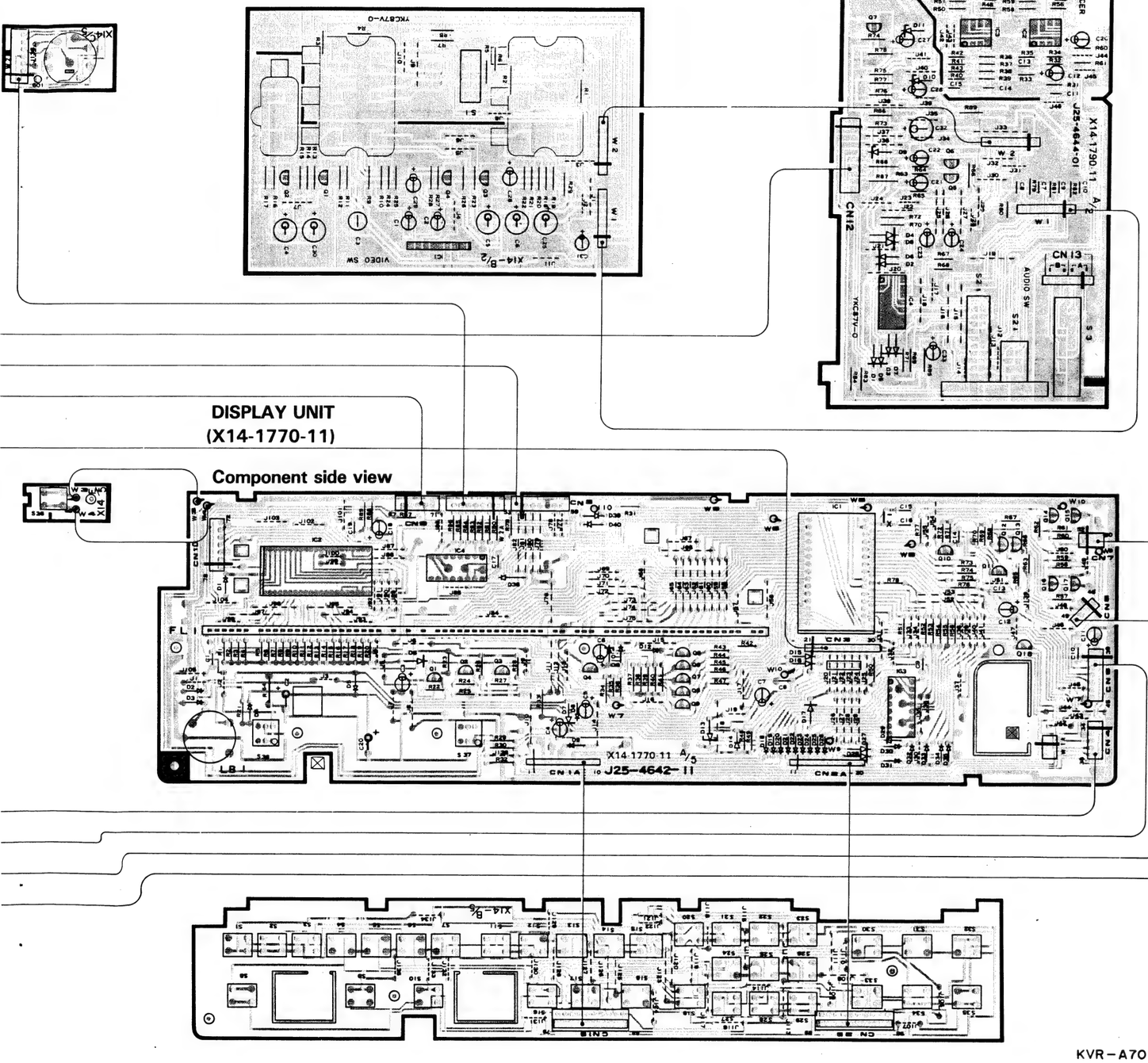
Ⓔ
Ⓓ
Ⓒ
Ⓖ



PC BOARD

VIDEO CONTROL UNIT (X14-1790-11)

Component side view



DISPLAY UNIT (X14-1770-11)

X14-1790-11 (A/2)

IC2

1	6.2V
2	
3	6.1V
4	0V
5	6.2V
6	
7	
8	11.5V

IC3

1	6.2V
2	
3	
4	0V
5	6.2V
6	
7	
8	11.5V

IC4

1	0V
2	
3 – 9	−6.2V
10	0V
11	
12	6.1V
13	(−6.1V)
14	6.2V

Q5

E	−1.6V
C	11.5V
B	−1.2V

Q6

E	−1.4V
C	11.5V
B	−0.7V

Q7

E	−6.2V
C	6.1V (−6.1V)
B	−6.2V (−5.6V)

X14-1790-11 (B/2)

IC1

3	0V
4	4.7V
5	
6	10V
7	5.5V
8	5.6V

Q1

E	5.5V
C	10V
B	6.1V

Q2

E	4.9V
C	10V
B	5.5V

Q3

E	5.1V
C	10V
B	5.7V

Q4

E	5.1V
C	10V
B	5.7V

X14-1770-11 (A/5)

IC1

29	0V
32	
57	−28V

Q1, 2, 3

E	5V
C	–
B	–

Q4

E	−28V
C	–
B	–

Q5, 6, 7, 8, 9

E	–
C	5V
B	–

Q10, 11, 12 13, 14, 15 16, 17

E	0V
C	–
B	–

FL1

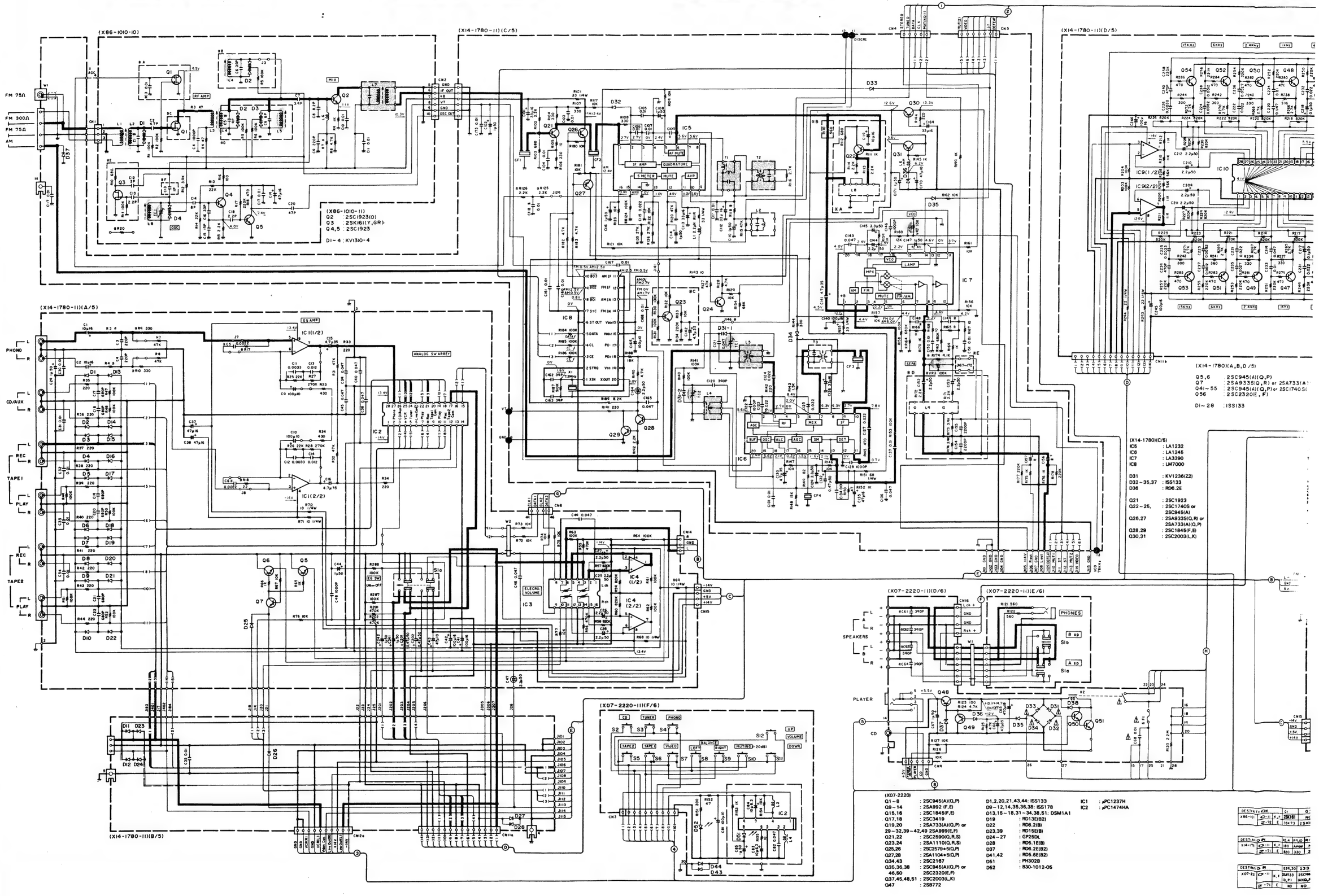
24	5.5V
26	

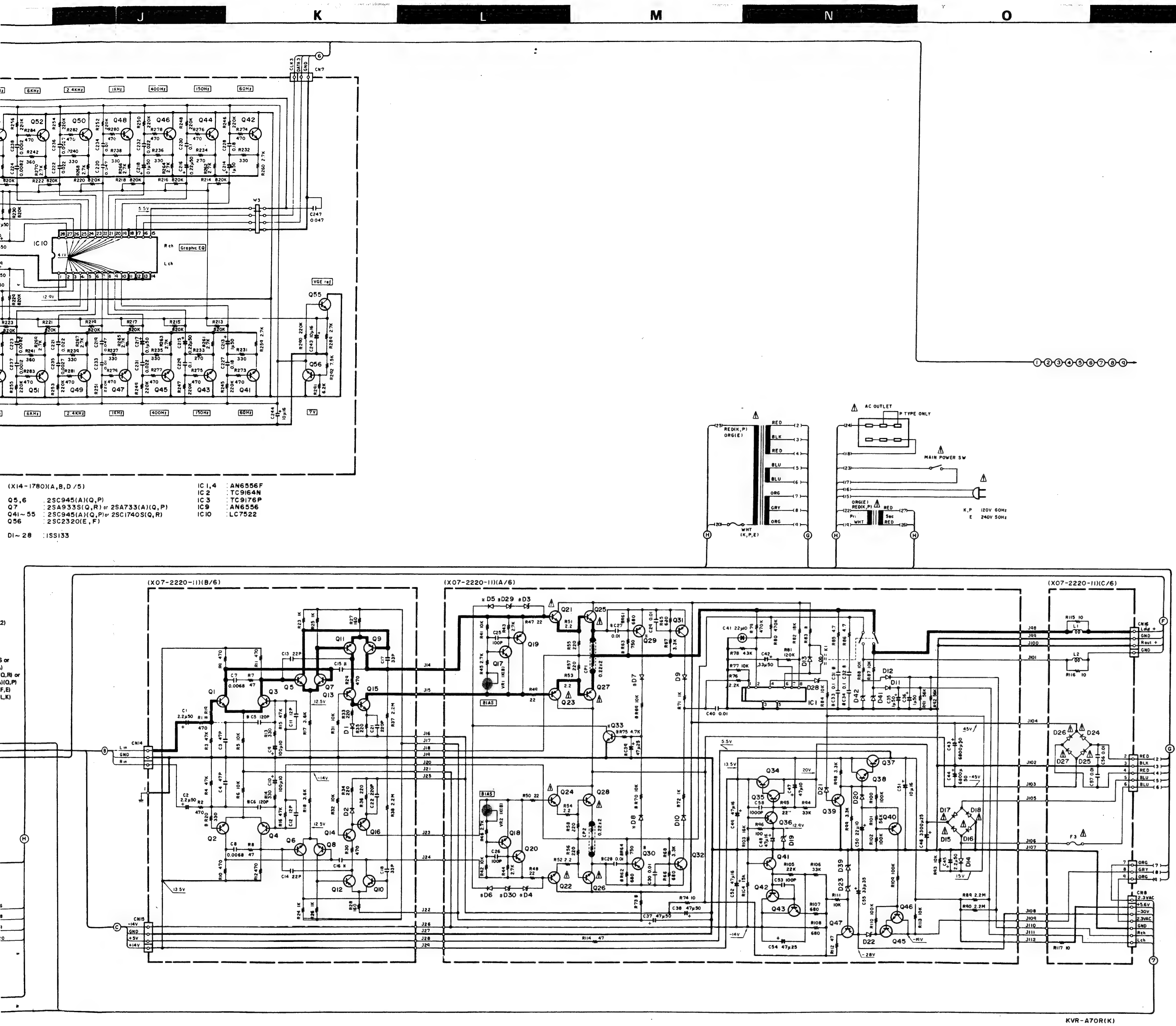
CN8

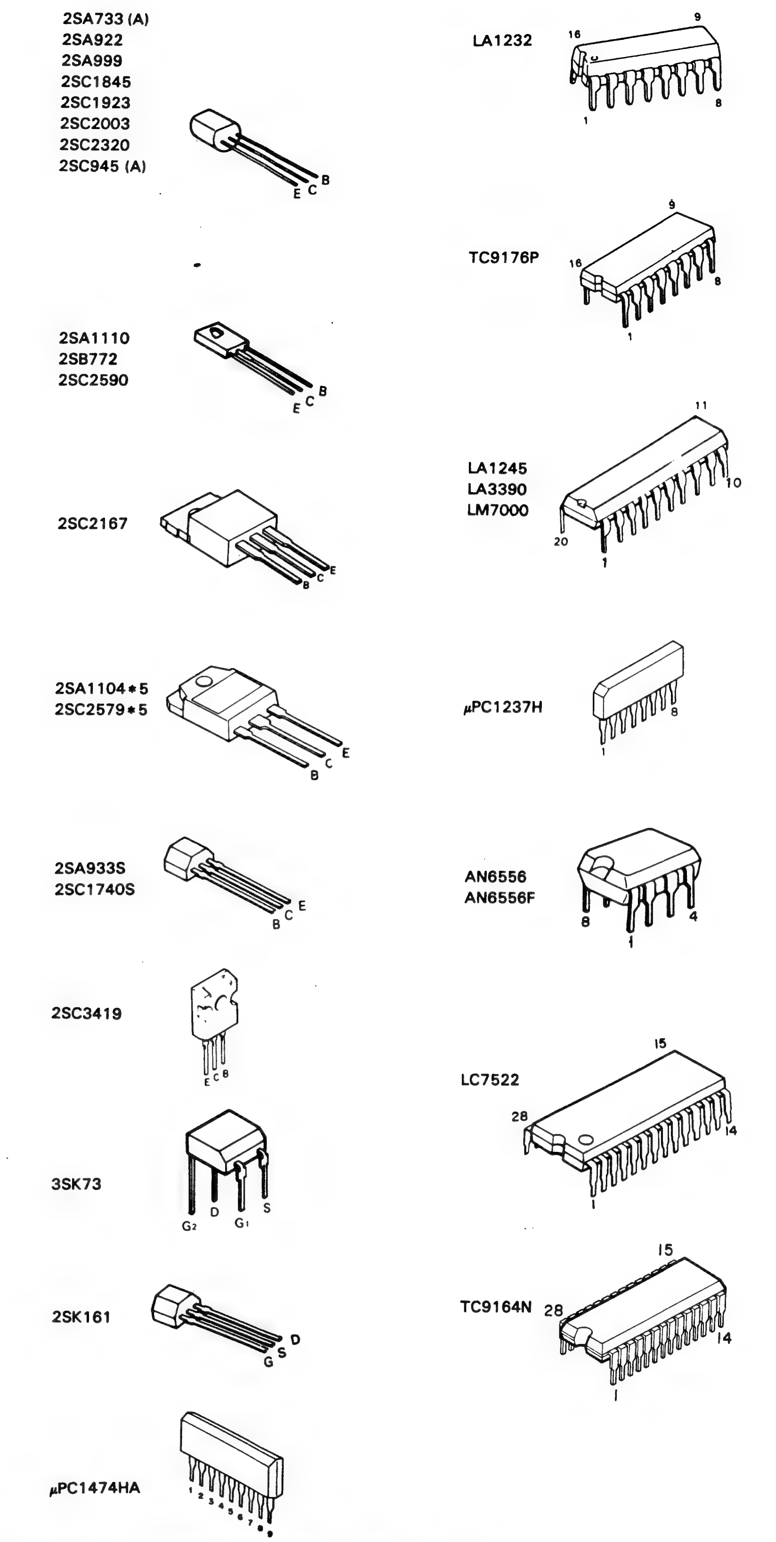
54	5.5V
55	−28V
57	0V

KVR-A70R

Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.


(X86-1010-10)
(X14-1780-11)(C/5)
(X14-1780-11)(D/5)
(X14-1780-11)(A/5)
(X14-1780-11)(B/5)
(X07-2220-11)(D/6)
(X07-2220-11)(E/6)
(X07-2220-11)(F/6)
(X86-1010-11)
Q2 : 2SC1923(O)
Q3 : 2SK161(Y,GR)
Q4,5 : 2SC1923
DI~4 : KV1310-4
(X14-1780)(A,B,D/5)
Q5,6 : 2SC945(A)(Q,P)
Q7 : 2SA933S(Q,R) or 2SA733(A)
Q41~55 : 2SC945(A)(Q,P) or 2SC1740S(
Q56 : 2SC2320(E,F)
DI~28 : ISS133
(X14-1780)(C/5)
IC5 : LA1232
IC6 : LA1245
IC7 : LA3390
IC8 : LM7000
D31 : KV1236(Z2)
D32~35,37 : ISS133
D36 : RD6.2E
Q21 : 2SC1923
Q22~25, : 2SC1740S or 2SC945(A)
Q26,27 : 2SA933S(Q,R) or 2SA733(A)(Q,P)
Q28,29 : 2SC1845(F,E)
Q30,31 : 2SC2003(L,K)
(X07-2220)
Q1~8 : 2SC945(A)(Q,P)
Q9~14 : 2SA992 (F,E)
Q15,16 : 2SC1845(F,E)
Q17,18 : 2SC3419
Q19,20 : 2SA733(A)(Q,P) or
29~32,39~42,49 2SA999(E,F)
Q21,22 : 2SC2690(Q,R,S)
Q23,24 : 2SA1110(Q,R,S)
Q25,26 : 2SC2579+S(Q,P)
Q27,28 : 2SA1104+S(Q,P)
Q34,43 : 2SC2167
Q35,36,38 46,50 : 2SC945(A)(Q,P) or 2SC2320(E,F)
Q37,45,48,51 : 2SC2003(L,K)
Q47 : 2SB772
D1,2,20,21,43,44: ISS133
D6~12,14,35,36,38: ISS178
D13,15~18,31~34,38,51: DSM1A1
D19 : RD13E(B2)
D22 : RD8.2(B)
D23,39 : RD15E(B)
D24~27 : GP25DL
D28 : RD5.1E(B)
D37 : RD6.2E(B2)
D41,42 : RD5.6E(B2)
D51 : PH302(B)
D52 : B30-1012-05
IC1 : μPC1237H
IC2 : μPC1474HA
FM 75Ω
FM 300Ω
FM 75Ω
AM
PHONO
CD/AUX
TAPE1
TAPE2
REC
PLAY
SPEAKERS
PLAYER
PHONES
RF AMP
MIX
IF AMP
QUADRATURE
S METER
MUTE
AVR
AF MUTE
EQ AMP
ANALOG SW ARREY
ELECRO VOLUME
VCO
MPX
LAMP
DISCRI
IF OUT
XT
OSC OUT
CD
TUNER
PHONO
TAPE2
TAPE1
VIDEO
BALANCE
LEFT
RIGHT
MUTING -20dB
VOLUME
UP
DOWN
B sp
A sp





DESTINATION			Q1	Q3	C1	C3	C5	C6	C12	C13	R6	R7	R10	R11	R20	A	B	C	D	E	F
X86-101	0-11	K,P	2SK161	NO	3.9P	NO	NO	3.9P	NO	1P	NO	22K	NO	NO	Jumper	NO	YES	YES	NO	NO	YES
	2-72	E	3SK73	2SK161	2.2P	YES	YES	6P	YES	2.2P	YES	33K	YES	YES	22	YES	NO	NO	YES	YES	NO

DESTINATION			R3,4	R9,10	R17,18	R23,24	R118	R124	R125,126	R163,164	R165,166	R179	C5,6	C109	C118	C148,149	C156,157	VR3	J127,141,146	A	B	C	D	E
X14-178	0-11	K,P	180	Jumper	NO	430	12K	NO	NO	NO	56K	YES	NO	330P	NO	1300P	1μ50	NO	NO	NO	YES	NO	NO	YES
	2-71	E	820	330	22	490	27K	YES	YES	YES	110K	NO	0.0022	100P	YES	470P	10μ16	YES	YES	YES	NO	YES	YES	NO

DESTINATION			Q29,30	Q33	D3,4	D5~8	D29,30	R19,20	R61,62	R63,64	R69,70	R73	R75	R83	R130	C5,6	C15,16	C27,28	C31,32	C33,34	C39	C61~64	F1	F3
X07-222	0-11	K,F	2SA733 (Q,P)	2SC945 (A)(Q,P)	RD11 E(B2)	1SS 178	RD16 E (B2)	Jumper	YES	YES	YES	22K	YES	820	YES	NO	1P	YES	0.047	NO	YES	NO	5A	1.5A
	2-71	E	NO	NO	NO	NO	NO	330	NO	NO	NO	10	NO	680	NO	YES	6P	NO	0.1	YES	NO	YES	T2.5A	T1.6A

KVR-A70R(K)

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Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

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KVR-A70R

KENWOOD

(X14-1790-11)
Q1,7 : 2SC2320(E,F) or 2SC945(A)(Q,P)
Q3,4 : 2SC2320(E,F)
Q5,6 : 2SC1845(F,E)
Q2 : 2SC2003(L,K)

D1~8 : 1S2076 or ISS133
D9 : RD10E(B)
D10,11 : RD8.2E(B)

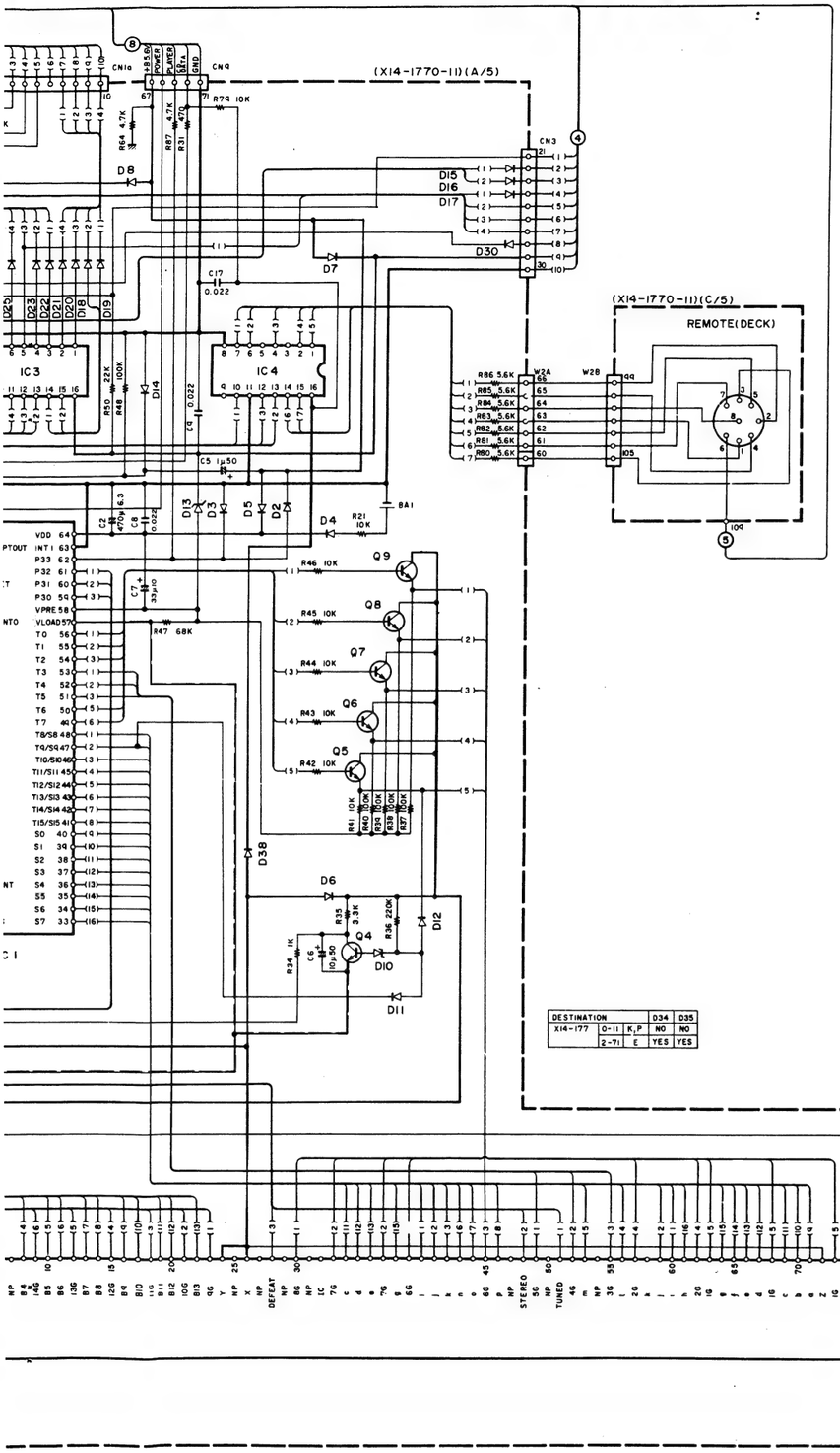
IC1 : BA7001
IC2,3 : AN6556
IC4 : μPD4066BC

(X14-1770-11)
Q1~3 : 2SA999S(Q,R) or 2SA733(A)(Q,P)
Q5~17 : 2SC1740S(Q,R) or 2SC945(A)(Q,P)
Q4 : 2SC1845(F,E)
Q18 : 2SC945(A)(Q,P)

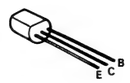
D1~9,14~35,38~40 : ISS133
D10 : RD20E(B)
D11,12 : ISS131
D13 : RD10E(B)

IC1 : μPD7519G-172-36
IC2 : LC7565
IC3,4 : MB84028BM or μPD4028BC

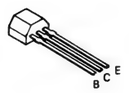
DESTINATION			C7~10
X14-1790	0-11	K,P	NO
	2-71	E	YES



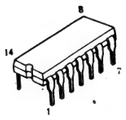
2SA733 (A)
2SC1845
2SC2003
2SC2320
2SC945 (A)



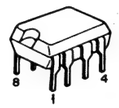
2SA933S
2SC1740S



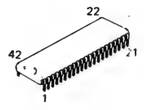
μPD4028BC
μPD4066BC



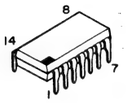
AN6556



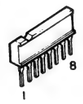
LC7565



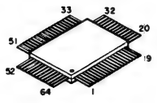
MB84028BM



BA7001



μPD7519G-172-36



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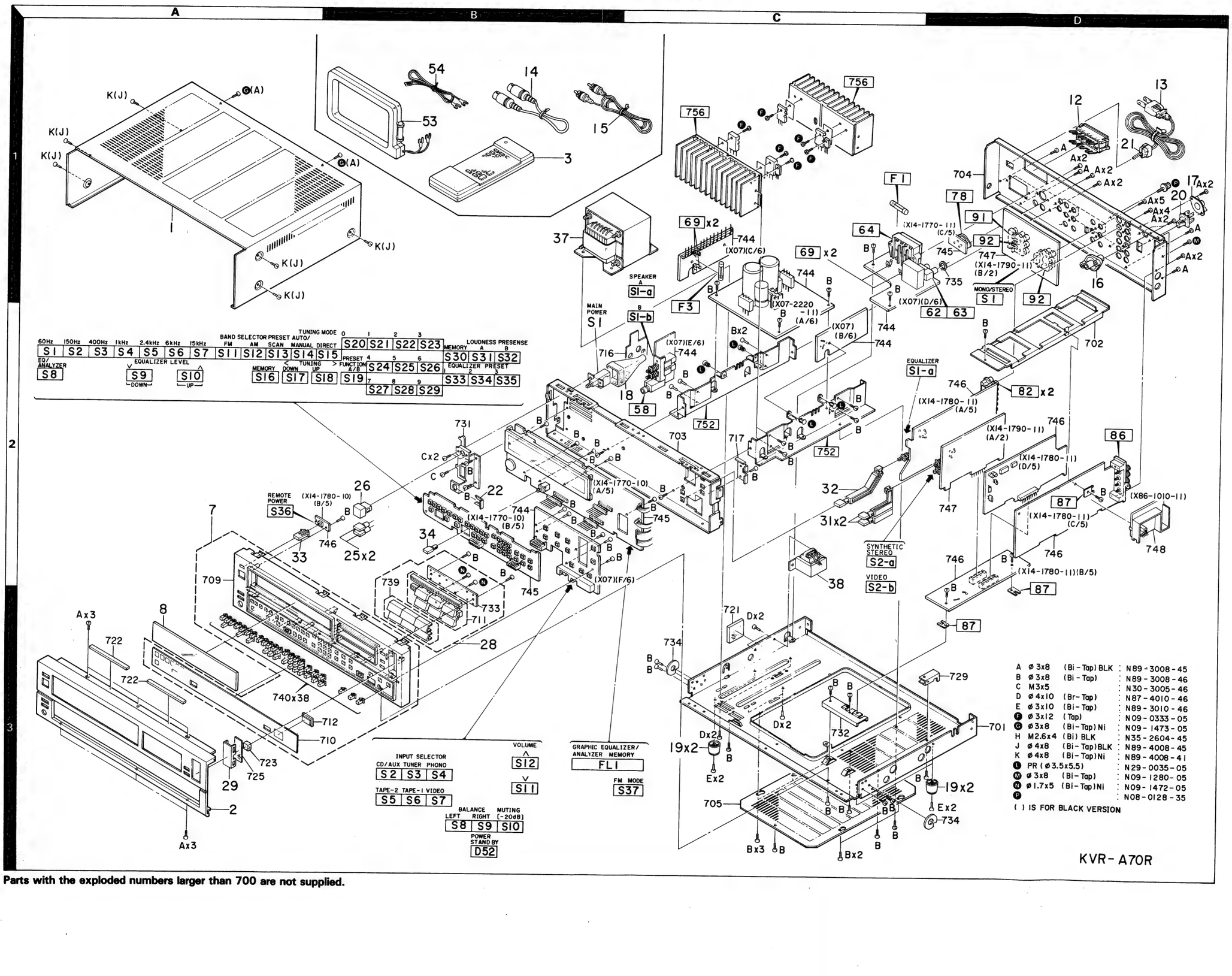
KVR-A70R

KENWOOD

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

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	Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
				KVR-A70R			
	1	1A		A01-1419-02	METALLIC CABINET	KPE	B
	1	1A		A01-1420-02	METALLIC CABINET	KP	S
	2	3A	*	A20-4376-02	PANEL	KPE	B
	2	3A	*	A20-4377-02	PANEL	KP	S
	3	1B		A70-0127-05	REMOTE CONTROLLER ASSY		
	7	2A	*	B01-0285-01	PANEL ESCUTCHEON ASSY	KPE	B
	7	2A	*	B01-0294-01	PANEL ESCUTCHEON ASSY	KP	S
	8	3A	*	B10-0584-03	FRONT GLASS		
	-			B46-0092-03	WARRANTY CARD	KK	
	-			B46-0121-03	WARRANTY CARD	PP	
	-			B46-0122-13	WARRANTY CARD	E	
	-			B50-5704-00	INSTRUCTION MANUAL (ENGLISH)		
	-		*	B50-5705-00	INSTRUCTION MANUAL (FRENCH)	PEP	
	-		*	B50-5706-00	INSTRUCTION MANUAL (D, I, G)	E	
	-			B58-0245-33	CAUTION CARD (FTZ)	E	
	-			B58-0269-04	CAUTION CARD	KK	
⚠	12	1D		E03-0055-05	AC OUTLET	E	
⚠	12	1D		E03-0068-05	AC OUTLET	PP	
	12	1D		E03-0075-05	AC OUTLET	KK	
⚠	13	1D		E30-0459-05	AC POWER CORD	E	
⚠	13	1D		E30-0780-05	AC POWER CORD	KK	
⚠	13	1D		E30-0974-05	AC POWER CORD	PP	
	14	1B		E30-0950-05	CORD WITH DIN CONN (CASSETTE)		
	15	1B		E30-1360-05	AUDIO CORD (CD)		
	16	1D		E04-0006-05	RF COAXIAL CABLE RECEPTACLE	E	
	17	1D		E29-0130-04	LEAD PLATE	E	
	18	1B		F29-0067-05	INSULATING COVER (POWER SW)	E	
	-		*	H01-5475-04	ITEM CARTON CASE	KPE	B
	-		*	H01-5601-04	ITEM CARTON CASE	KP	S
	-			H10-1800-02	POLYSTYRENE FOAMED FIXTURE		
	-			H10-1801-02	POLYSTYRENE FOAMED FIXTURE		
	-			H25-0181-04	PROTECTION BAG (150X260X0.05)		
	-			H25-0224-04	PROTECTION BAG (800X400)		
	-			H25-0232-04	PROTECTION BAG (235X350)		
	19	3C,3D		J02-0126-05	FOOT		
	20	1D		J19-0626-12	ANTENNA HOLDER		
⚠	21	1D		J42-0083-05	POWER CORD BUSHING		
	22	2B		J21-3326-05	JACK MOUNTING HARDWARE		
	-			J61-0307-05	WIRE BAND		
	25	2B		K27-1304-04	KNOB (BUTTON) SPEAKERS	KPE	B
	25	2B		K27-1487-04	KNOB (BUTTON) SPEAKERS	KP	S
	26	2B		K29-1446-04	KNOB ASSY(BTN) MAIN POWER	KP	S
	26	2B		K29-2001-04	KNOB ASSY(BTN) MAIN POWER	KPE	B
	28	3B		K29-2095-03	KNOB ASSY(BTN) SELECTOR	KPE	B
	28	3B		K29-2096-03	KNOB ASSY(BTN) SELECTOR	KP	S
	29	3A		K29-2105-04	KNOB (BUTTON) VOLUME	KPE	B
	29	3A		K29-2106-04	KNOB (BUTTON) VOLUME	KP	S
	31	2C		K29-2129-04	KNOB ASSY(BTN) VIDEO,SYNTHE		
	32	2C		K29-2130-04	KNOB ASSY(BTN) EQUALIZER		
	33	2A		K29-2135-04	KNOB (BUTTON) REMOTE POWER		
	34	2B		K27-0965-04	KNOB (BUTTON) FM MODE		

Destination
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S: South Africa T: England U: PX(Far East, Hawaii)
UE: AAFES(Europe) X: Australia M: Other Areas
K,P: KVR-A70R (Silver)
Others: KVR-A70R (Black)

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⚠	37	1B	*	L01-6671-05	POWER TRANSFORMER (MAIN)	KPKP	
⚠	37	1B	*	L01-6672-05	POWER TRANSFORMER (MAIN)	E	
⚠	38	2C		L01-6681-05	POWER TRANSFORMER (REMOTE)	KPKP	
	38	2C	*	L01-6682-05	POWER TRANSFORMER (REMOTE)	E	
	G			N09-1473-05	TAPPING SCREW (Ø3X8)	EKP	
	M			N09-1280-05	TAPTITE SCREW (Ø3X8)		
	N			N09-1472-05	TAPTITE SCREW (Ø1.7X5)		
	P	1D		N08-0128-35	BINDING POST (GND)		
⚠	S 1	2B		S40-1073-05	PUSH SWITCH (MAIN POWER)		
	53	1B		T90-0104-15	LOOP ANTENNA		
	54	1B		T90-0132-05	T TYPE ANTENNA		
				POWER AMPLIFIER UNIT (X07-2220-11)			
	D52			B30-1012-05	LED(SLP-981C-50)		
	C1 ,2			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
	C3 ,4			CC45FSL1H470J	CERAMIC 47PF J		
	C5 ,6			CC45FSL1H121J	CERAMIC 120PF J	E	
	C7 ,8			CF92FV1H682J	MF 6800PF J		
	C9 ,10			CE04FW1A101M	ELECTRO 100UF 10WV		
	C11 ,12			CC45FSL1H120J	CERAMIC 12PF J		
	C13 ,14			CC45FSL1H220J	CERAMIC 22PF J		
	C15 ,16			CC45FSL1H010C	CERAMIC 1.0PF C	KPKP	
	C15 ,16			CC45FSL1H060D	CERAMIC 6.0PF D	E	
	C17 ,18			CC45FSL1H330J	CERAMIC 33PF J		
	C21 ,22			CC45FSL1H221J	CERAMIC 220PF J		
	C25 ,26			CC45FSL1H101J	CERAMIC 100PF J		
	C27 -30			C91-0769-05	CERAMIC 0.01UF M	KPKP	
	C29 ,30			C91-0769-05	CERAMIC 0.01UF M	E	
	C31 -34			CF92FV1H104J	MF 0.10UF J	E	
	C31 ,32			CF92FV1H473J	MF 0.047UF J	KPKP	
	C35 ,36			CE04FW1H010M	ELECTRO 1.0UF 50WV		
	C37 ,38			CE04FW1H470M	ELECTRO 47UF 50WV		
	C39			CE04FW1E470M	ELECTRO 47UF 25WV	KPKP	
	C40			CK45FF1H103Z	CERAMIC 0.010UF Z		
	C41			CE04HW1A220M	NP-ELEC 22UF 10WV		
	C42			CE04FW1H330M	ELECTRO 33UF 50WV		
	C43 ,44			C90-0366-05	ELECTRO 6800UF 50WV		
	C45			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
	C46			CE04FW1E332M	ELECTRO 3300UF 25WV		
	C47			CE04FW1A470M	ELECTRO 47UF 10WV		
	C48 ,49			CE04FW1C470M	ELECTRO 47UF 16WV		
	C50			CE04FW1A220M	ELECTRO 22UF 10WV		
	C51			CE04FW1C100M	ELECTRO 10UF 16WV		
	C52			CE04FW1C470M	ELECTRO 47UF 16WV		
	C53			C91-0745-05	CERAMIC 100PF K		
	C54			CE04FW1E470M	ELECTRO 47UF 25WV		
	C55			CE04FW1V330M	ELECTRO 33UF 35WV		
	C56 ,57			CK45FF1H103Z	CERAMIC 0.010UF Z		
	C58			CK45B1H102K	CERAMIC 1000PF K		
	C61 -64			CK45FB1H391K	CERAMIC 390PF K	E	
	C65			CE04FW1C471M	ELECTRO 470UF 16WV		
	C66			CE04FW1V4R7M	ELECTRO 4.7UF 35WV		
	C67			CE04FW1H010M	ELECTRO 1.0UF 50WV		
⚠	C68			C91-0647-05	CERAMIC 0.01UF P		

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	C81			CE04FW1A101M	ELECTRO 100UF 10WV		
	C82			CK45FF1H473Z	CERAMIC 0.047UF Z		
	C83 ,84		*	CE04JW0J100M	ELECTRO 10UF 6.3WV		
	C85			CE04JW1H010M	ELECTRO 1.0UF 50WV		
	58	2C		E11-0127-05	PHONE JACK (3P) HEADPHONE		
	62	1D		E11-0152-05	MINI PHONE JACK (3P) PLAYER		
	63	1D		E13-0119-05	PHONO JACK (1P) CD		
	64	1C		E20-0823-05	LOCK TERMINAL BOARD(8P) SPKR		
⚠	F1	1C		F05-2525-05	FUSE (SEMKO) (250V T2.5A)	E	
⚠	F1	1C		F06-5022-05	FUSE (UL) (250V 5A)	KPKP	
⚠	F3	1C		F05-1623-05	FUSE (SEMKO) (250V T1.6A)	E	
⚠	F3	1C		F06-1521-05	FUSE (UL) (250V 1.5A)	KPKP	
	69	1C		J13-0041-05	FUSE CLIP	KPKP	
	69	1C		J13-0054-05	FUSE CLIP	E	
	L1 ,2			L39-0085-05	PHASE-COMPENSATION COIL		
	L3 ,4			L39-0123-05	PEAKING COIL		
	F			N09-0333-05	TAPPING SCREW (Ø3X12)		
	L			N29-0035-05	PUSH RIVET (Ø3.5X5.5)		
	CP1 ,2			R90-0187-05	MULTI-COMP 0.22X2 K 5W		
	R23 -26			RD14AB2E102J	FL-PROOF RD 1.0K J 1/4W		
	R27 ,28		*	RD14AB2E161J	FL-PROOF RD 160 J 1/4W		
	R33 -36			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
	R47 -50			RD14AB2E220J	FL-PROOF RD 22 J 1/4W		
	R51 -54			RD14AB2E2R2J	FL-PROOF RD 2.2 J 1/4W		
	R55 -58			RD14AB2E221J	FL-PROOF RD 220 J 1/4W		
	R73			RD14AB2E220J	FL-PROOF RD 22 J 1/4W	KPKP	
	R73 ,74			RD14AB2E100J	FL-PROOF RD 10 J 1/4W	E	
	R74			RD14AB2E100J	FL-PROOF RD 10 J 1/4W	KPKP	
	R83			RS14KB3D681J	FL-PROOF RS 680 J 2W	E	
	R83			RS14KB3D821J	FL-PROOF RS 820 J 2W	KPKP	
	R85 ,86			RS14KB3D4R7J	FL-PROOF RS 4.7 J 2W		
	R107,108			RS14DB3A681J	FL-PROOF RS 680 J 1W		
	R112			RS14DB3A470J	FL-PROOF RS 47 J 1W		
	R114			RD14AB2E470J	FL-PROOF RD 47 J 1/4W		
	R115,116			RS14DB3A100J	FL-PROOF RS 10 J 1W		
	R117			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
	R121,122			RS14DB3A561J	FL-PROOF RS 560 J 1W		
	R123			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
	R130			R92-0173-05	RC 2.2M M 1/2W	KPKP	
	R152			RD14AB2E470J	FL-PROOF RD 47 J 1/4W		
	VR1		*	R12-1066-05	TRIMMING POT.(1K) BIAS		
	K1			S51-2058-05	MAGNETIC RELAY		
⚠	K2			S51-1036-05	MAGNETIC RELAY		
	S1	1C	*	S42-2130-05	MULT. PUSH SW (SPEAKERS)		
	S2 -12	3B		S40-1064-05	PUSH SW (CD/AUX,TUNER, ETC)		
	D1 ,2			1SS133	DIODE		
	D3 ,4			RD11E(B2)	ZENER DIODE	KPKP	
	D5 -12			1SS178	DIODE	KPKP	
	D9 -12			1SS178	DIODE	E	
	D13			DSM1A1	DIODE		
	D14			1SS178	DIODE		
	D15 -18			DSM1A1	DIODE		

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Destination
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Others: KVR-A70R (Black)

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PARTS LIST

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D19			RD13E(B2)	ZENER DIODE		
D20 ,21			1SS133	DIODE		
D22			RD8.2E(B)	ZENER DIODE		
D23			RD15E(B)	ZENER DIODE		
D24 -27			GP25DL	DIODE		
D28			RD5.1E(B)	ZENER DIODE		
D29 ,30			RD16E(B2)	ZENER DIODE	KPKP	
D31 -34			DSM1A1	DIODE		
D35 ,36			1SS178	DIODE		
D37			RD6.2E(B2)	ZENER DIODE		
D38			DSM1A1	DIODE		
D39			RD15E(B)	ZENER DIODE		
D41 ,42			RD5.6E(B2)	ZENER DIODE		
D43 ,44			1SS133	DIODE		
D51			PH302B	PHOTO DIODE		
IC1			UPC1237H	IC(PROTECTION)		
IC2			UPC1474HA	IC(REMOTE CONTROLLER PREAMP)		
Q1 -8			2SC945(A)(Q,P)	TRANSISTOR		
Q9 -14			2SA992(F,E)	TRANSISTOR		
Q15 ,16			2SC1845(F,E)	TRANSISTOR		
Q17 ,18		*	2SC3419	TRANSISTOR		
Q19 ,20			2SA733(A)(Q,P)	TRANSISTOR		
Q19 ,20			2SA999(E,F)	TRANSISTOR		
Q21 ,22			2SC2590(Q,R,S)	TRANSISTOR		
Q23 ,24			2SA1110(Q,R,S)	TRANSISTOR		
Q25 ,26		*	2SC2579*5(Q,P)	TRANSISTOR		
Q27 ,28		*	2SA1104*5(Q,P)	TRANSISTOR		
Q29 ,30			2SA733(A)(Q,P)	TRANSISTOR	KPKP	
Q29 ,30			2SA999(E,F)	TRANSISTOR	KPKP	
Q31 ,32			2SA733(A)(Q,P)	TRANSISTOR		
Q31 ,32			2SA999(E,F)	TRANSISTOR		
Q33			2SC2320(E,F)	TRANSISTOR	KPKP	
Q33			2SC945(A)(Q,P)	TRANSISTOR	KPKP	
Q34			2SC2167	TRANSISTOR		
Q35 ,36			2SC2320(E,F)	TRANSISTOR		
Q35 ,36			2SC945(A)(Q,P)	TRANSISTOR		
Q37			2SC2003(L,K)	TRANSISTOR		
Q38			2SC2320(E,F)	TRANSISTOR		
Q38			2SC945(A)(Q,P)	TRANSISTOR		
Q39 -42			2SA733(A)(Q,P)	TRANSISTOR		
Q39 -42			2SA999(E,F)	TRANSISTOR		
Q43			2SC2167	TRANSISTOR		
Q45			2SC2003(L,K)	TRANSISTOR		
Q46			2SC2320(E,F)	TRANSISTOR		
Q46			2SC945(A)(Q,P)	TRANSISTOR		
Q47			2SB772	TRANSISTOR		
Q48			2SC2003(L,K)	TRANSISTOR		
Q49			2SA733(A)(Q,P)	TRANSISTOR		
Q49			2SA999(E,F)	TRANSISTOR		
Q50			2SC2320(E,F)	TRANSISTOR		
Q50			2SC945(A)(Q,P)	TRANSISTOR		
Q51			2SC2003(L,K)	TRANSISTOR		
DISPLAY UNIT (X14-1770-11)						
C1			CK45FF1H223Z	CERAMIC 0.022UF Z		

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C2		*	CE04DW0J471M	ELECTR0	470UF	6.3WV		
C3			CE04W1A470M	ELECTR0	47UF	10WV		
C4			CE04FW1V4R7M	ELECTR0	4.7UF	35WV		
C5			CE04W1H010M	ELECTR0	1.0UF	50WV		
C6			CE04W1H100M	ELECTR0	10UF	50WV		
C7			CE04W1A330M	ELECTR0	33UF	10WV		
C8 ,9			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C10			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C11 ,12			CE04FW1V4R7M	ELECTR0	4.7UF	35WV		
C13 ,14			CF92FV1H104J	MF	0.10UF	J		
C15 ,16			CC45FSL1H330J	CERAMIC	33PF	J		
C17			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C19			CK45FB1H152K	CERAMIC	1500PF	K		
78	1D		E06-0805-15	CYLINDRICAL RECEPTACLE (DIN)				
X1		*	L78-0207-05	RES0NAT0R (4.194MHZ)				
S1 -36	2A,2B		S40-1064-05	PUSH SW(FUNCTI0NS=E0,TUNER,ETC				
S37	3C	*	S40-2343-05	PUSH SWITCH (FM M0DE)				
D1 -9			1SS133	DI0DE				
D10		*	RD20E(B)	ZENER DI0DE				
D11 ,12			1SS131	DI0DE				
D13			RD10E(B)	ZENER DI0DE				
D14 -33			1SS133	DI0DE			KPKP	
D14 -35			1SS133	DI0DE			E	
D38 -40			1SS133	DI0DE				
FL1		*	FIP18AMW24	FLU0RESCENT INDICAT0R TUBE				
IC1		*	UPD7519G-172-36	IC(MICR0PR0CESS0R)				
IC2		*	LC7565	IC(GRAPHIC E0 FL DISPLAY DR)				
IC3 ,4			MB84028BM	IC(BCD-T0-DECIMAL DEC0DER)				
IC3 ,4			UPD4028BC	IC(BCD-T0-DECIMAL DEC0DER)				
Q1 -3			2SA733(A)(Q,P)	TRANSISTOR				
Q1 -3			2SA933S(Q,R)	TRANSISTOR				
Q4			2SC1845(F,E)	TRANSISTOR				
Q5 -17			2SC1740S(Q,R)	TRANSISTOR				
Q5 -17			2SC945(A)(Q,P)	TRANSISTOR				
Q18			2SC945(A)(Q,P)	TRANSISTOR				
RECEIVER UNIT (X14-1780-11)								
C1 ,2			CE04FW1C100M	ELECTR0	10UF	16WV		
C3 ,4			C91-0749-05	CERAMIC	220PF	K		
C5 ,6			CF92FV1H222J	MF	2200PF	J	E	
C9 ,10			CE04FW1A101M	ELECTR0	100UF	10WV		
C11 ,12			CF92FV1H332J	MF	3300PF	J		
C13 ,14			CF92FV1H123J	MF	0.012UF	J		
C15 ,16			CE04FW1V4R7M	ELECTR0	4.7UF	35WV		
C17 -22		*	C91-0755-05	CERAMIC	680PF	K		
C25 -28			CE04FW1H2R2M	ELECTR0	2.2UF	50WV		
C29			CE04FW1H010M	ELECTR0	1.0UF	50WV		
C30 -35			C91-0769-05	CERAMIC	0.01UF	M		
C36			CK45FF1H473Z	CERAMIC	0.047UF	Z		
C37 ,38			CE04FW1C470M	ELECTR0	47UF	16WV		
C39 ,40			CK45FF1H473Z	CERAMIC	0.047UF	Z		
C41 ,42			CE04FW1C101M	ELECTR0	100UF	16WV		
C43			CE04FW1A470M	ELECTR0	47UF	10WV		

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C44			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C45 ,46			CK45FF1H473Z	CERAMIC	0.047UF	Z		
C47			CE04HW1H3R3M	NP-ELEC	3.3UF	50WV		
C48			CK45FB1H102K	CERAMIC	1000PF	K		
C49			CK45FF1H473Z	CERAMIC	0.047UF	Z		
C101			CE04FW1C330M	ELECTRO	33UF	16WV		
C102			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C103-107			C91-0769-05	CERAMIC	0.01UF	M		
C108			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C109			C91-0745-05	CERAMIC	100PF	K	E	
C109		*	C91-0751-05	CERAMIC	330PF	K	KPKP	
C110			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C111			C91-0769-05	CERAMIC	0.01UF	M		
C112,113			CE04FW1C330M	ELECTRO	33UF	16WV		
C114			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C115			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C116			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C117			C91-0769-05	CERAMIC	0.01UF	M		
C118			C91-0769-05	CERAMIC	0.01UF	M	E	
C119			CE04FW1C100M	ELECTRO	10UF	16WV	E	
C120			CQ09FS1H391JY0	POLYSTY	390PF	J		
C121			CK45FF1H473Z	CERAMIC	0.047UF	Z		
C122			C91-0757-05	CERAMIC	0.001UF	K		
C123-125			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C126			CE04FW1C330M	ELECTRO	33UF	16WV		
C127			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C128			C91-0757-05	CERAMIC	0.001UF	K		
C129			CE04FW1H3R3M	ELECTRO	3.3UF	50WV		
C130			CE04FW1V4R7M	ELECTRO	4.7UF	35WV		
C131			C91-0769-05	CERAMIC	0.01UF	M		
C132			CE04FW1HR47M	ELECTRO	0.47UF	50WV		
C134			C91-0769-05	CERAMIC	0.01UF	M		
C135			CE04FW1C470M	ELECTRO	47UF	16WV		
C136			CF92FV1H473J	MF	0.047UF	J		
C137			CF92FV1H103J	MF	0.010UF	J		
C140			CE04FW1C101M	ELECTRO	100UF	16WV		
C141			CE04FW1V4R7M	ELECTRO	4.7UF	35WV	KPKP	
C141,142			CE04FW1V4R7M	ELECTRO	4.7UF	35WV	E	
C143			CF92FV1H473J	MF	0.047UF	J		
C144			CE04FW1H2R2M	ELECTRO	2.2UF	50WV		
C145			CE04FW1H3R3M	ELECTRO	3.3UF	50WV		
C146			CQ09FS1H102JY0	POLYSTY	1000PF	J		
C147			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C148			CK45FB1H471K	CERAMIC	470PF	K	E	
C148,149			CF92FV1H132J	MF	1300PF	J	KPKP	
C150,151			C91-0769-05	CERAMIC	0.01UF	M		
C152,153			CE04FW1H2R2M	ELECTRO	2.2UF	50WV	E	
C154,155			CF92FV1H222J	MF	2200PF	J	E	
C156,157			CE04FW1C100M	ELECTRO	10UF	16WV	E	
C156,157			CE04FW1H010M	ELECTRO	1.0UF	50WV	KPKP	
C160,161			C91-0769-05	CERAMIC	0.01UF	M		
C162,163			CC45FCH1H390J	CERAMIC	39PF	J		
C164			CE04HW1H2R2M	NP-ELEC	2.2UF	50WV		
C165			CF92FV1H473J	MF	0.047UF	J		
C166			CE04FW1A101M	ELECTRO	100UF	10WV		

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C167,168			C91-0769-05	CERAMIC 0.01UF M		
C169			CE04FW1C330M	ELECTRO 33UF 16WV		
C170			CE04FW1A470M	ELECTRO 47UF 10WV		
C171			CE04FW1H010M	ELECTRO 1.0UF 50WV		
C175			C91-0769-05	CERAMIC 0.01UF M		
C201,202			CE04FW1HR47M	ELECTRO 0.47UF 50WV		
C209-212			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C213,214			CE04FW1H010M	ELECTRO 1.0UF 50WV		
C215,216			CE04FW1HR22M	ELECTRO 0.22UF 50WV		
C217,218			CE04FW1H0R1M	ELECTRO 0.1UF 50WV		
C219,220			CF92FV1H473J	MF 0.047UF J		
C221,222			CF92FV1H223J	MF 0.022UF J		
C223,224			CF92FV1H822J	MF 8200PF J		
C225,226			CF92FV1H332J	MF 3300PF J		
C227,228			CF92FV1H184J	MF 0.18UF J		
C229,230			CF92FV1H104J	MF 0.10UF J		
C231,232			CF92FV1H223J	MF 0.022UF J		
C233,234			CF92FV1H103J	MF 0.010UF J		
C235,236			CF92FV1H272J	MF 2700PF J		
C237,238			CF92FV1H122J	MF 1200PF J		
C239,240			CK45FB1H471K	CERAMIC 470PF K		
C241,242			CE04FW1H010M	ELECTRO 1.0UF 50WV		
C243,244			CE04FW1C100M	ELECTRO 10UF 16WV		
C245,246			CE04FW1C101M	ELECTRO 100UF 16WV		
C247			CK45FF1H473Z	CERAMIC 0.047UF Z		
TC1 ,2			C05-0303-05	CERAMIC TRIMMER CAPACITOR(20PF		
82	2D		E13-0621-05	PHONO JACK (6P) AUDIO INPUT		
86	2D		E20-0452-05	SCREW TERMINAL BOARD(4P) ANT		
87	2D,3D		E23-0125-05	TERMINAL (GND)		
CF1 ,2			L72-0140-05	CERAMIC FILTER	KPKP	
CF1 ,2			L72-0190-05	CERAMIC FILTER	E	
CF3			L72-0099-05	CERAMIC FILTER		
CF4			L72-0096-05	CERAMIC FILTER		
L1			L40-2292-14	SMALL FIXED INDUCTOR(2.2UH,M)		
L2		*	L39-0128-05	PEAKING COIL		
L4			L32-0277-15	MW OSCILLATING COIL		
L5			L31-0509-05	MW-RF COIL		
L6			L40-1021-14	SMALL FIXED INDUCTOR(1.0MH,K)		
L8			L79-0125-05	LC FILTER	E	
L9			L79-0154-05	LC FILTER	E	
T1			L30-0403-05	FM IFT		
T2			L30-0404-05	FM IFT		
T3			L30-0362-05	AM IFT		
X1			L77-0578-05	CRYSTAL RESONATOR(7.2MHZ)		
R68 -71			RD14AB2E100J	FL-PROOF RD 10 J 1/4W		
R101			RD14GB2E330J	FL-PROOF RD 33 J 1/4W		
R119			RD14AB2E330J	FL-PROOF RD 33 J 1/4W		
R151			RD14AB2E330J	FL-PROOF RD 33 J 1/4W		
R155			RD14AB2E330J	FL-PROOF RD 33 J 1/4W		
R293,294			RD14AB2E220J	FL-PROOF RD 22 J 1/4W		
VR2			R12-3096-05	TRIMMING POT.(10K) VOL		
VR3			R12-5046-05	TRIMMING POT.(100K) SEPA	E	
S1	2C		S40-4066-05	PUSH SW (EQ)		

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D1 -28			1SS133	DIODE				
D31			KV1236(Z2)	VARIABLE CAPACITANCE DIODE				
D32 -35			1SS133	DIODE				
D36			RD6.2E(B)	ZENER DIODE				
D37			1SS133	DIODE				
IC1			AN6556F	IC(OP AMP X2)				
IC2		*	TC9164N	IC(16CH BILATERAL SELECTOR SW)				
IC3			TC9176P	IC(2CH ELECTRONIC VOLUME)				
IC4			AN6556F	IC(OP AMP X2)				
IC5		*	LA1232	IC(FM IF/DETECTION)				
IC6			LA1245	IC(AM)				
IC7			LA3390	IC(FM MPX)				
IC8			LM7000	IC(PLL FREQUENCY SYNTHESIZER)				
IC9			AN6556	IC(OP AMP X2)				
IC10		*	LC7522	IC(7CH GRAPHIC EQUALIZER)				
Q5 ,6			2SC945(A)(Q,P)	TRANSISTOR				
Q7			2SA733(A)(Q,P)	TRANSISTOR				
Q7			2SA933S(Q,R)	TRANSISTOR				
Q21			2SC1923	TRANSISTOR				
Q22 -24			2SC1740S(Q,R)	TRANSISTOR			E	
Q22 -24			2SC945(A)(Q,P)	TRANSISTOR			E	
Q24			2SC1740S(Q,R)	TRANSISTOR			KPKP	
Q24			2SC945(A)(Q,P)	TRANSISTOR			KPKP	
Q26 ,27			2SA733(A)(Q,P)	TRANSISTOR				
Q26 ,27			2SA933S(Q,R)	TRANSISTOR				
Q28 ,29			2SC1845(F,E)	TRANSISTOR				
Q30 ,31			2SC2003(L,K)	TRANSISTOR				
Q41 -55			2SC1740S(Q,R)	TRANSISTOR				
Q41 -55			2SC945(A)(Q,P)	TRANSISTOR				
Q56			2SC2320(E,F)	TRANSISTOR				
VIDEO CONTROL UNIT (X14-1790-11)								
C1 ,2			CE04FW1C330M	ELECTRO	33UF	16WV		
C3			CE04HW1C220M	NP-ELEC	22UF	16WV		
C4		*	CE04DW1A471M	ELECTRO	470UF	10WV		
C5 ,6		*	CE04DW1A331M	ELECTRO	330UF	10WV		
C7 -11			CK45FB1H561K	CERAMIC	560PF	K	E	
C11			CK45FB1H561K	CERAMIC	560PF	K	KPKP	
C12			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C14			CF92FV1H123J	MF	0.012UF	J		
C15			CF92FV1H332J	MF	3300PF	J		
C16			CF92FV1H123J	MF	0.012UF	J		
C17			CF92FV1H332J	MF	3300PF	J		
C18			CF92FV1H123J	MF	0.012UF	J		
C19			CF92FV1H332J	MF	3300PF	J		
C20			CE04FW1C100M	ELECTRO	10UF	16WV		
C21 ,22			CE04FW1H010M	ELECTRO	1.0UF	50WV		
C23 ,24			CE04FW1V4R7M	ELECTRO	4.7UF	35WV		
C25		*	CE04DW1C331M	ELECTRO	330UF	16WV		
C26 ,27			CE04FW1A470M	ELECTRO	47UF	10WV		
C28 ,29			CE04FW1C330M	ELECTRO	33UF	16WV		
C31			CE04FW1A470M	ELECTRO	47UF	10WV		
C32			CE04FW1C101M	ELECTRO	100UF	16WV		
C33			CE04FW1V4R7M	ELECTRO	4.7UF	35WV		
91	1D		E13-0227-05	PHONO JACK (2P) MONITOR OUT				

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92	1D		E13-0625-05	PHONO JACK (6P) VIDEO		
R76			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R86			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
R89			RD14AB2E101J	FL-PROOF RD 100 J 1/4W		
S1	1D	*	S31-2096-05	SLIDE SWITCH (MONO/STEREO)		
S2	2C	*	S42-2131-05	MULT. PUSH SW (SYNTHE,VIDEO)		
D1 -8			1SS133	DIODE		
D1 -8			1S2076	DIODE		
D9			RD10E(B)	ZENER DIODE		
D10 ,11			RD8.2E(B)	ZENER DIODE		
IC1			BA7001	IC(SWITCHER FOR VCR)		
IC2 ,3			AN6556	IC(OP AMP X2)		
IC4			UPD4066BC	IC(BILATERAL SWITCH X4)		
Q1			2SC2320(E,F)	TRANSISTOR		
Q1			2SC945(A)(Q,P)	TRANSISTOR		
Q2			2SC2003(L,K)	TRANSISTOR		
Q3 ,4			2SC2320(E,F)	TRANSISTOR		
Q5 ,6			2SC1845(F,E)	TRANSISTOR		
Q7			2SC2320(E,F)	TRANSISTOR		
Q7			2SC945(A)(Q,P)	TRANSISTOR		
FRONT END UNIT (X86-1010-11)						
C1		*	C91-0713-05	CERAMIC 2.2PF K	E	
C1		*	C91-0716-05	CERAMIC 3.9PF K	KPKP	
C2			CC45FSL1H470J	CERAMIC 47PF J		
C3			C91-0769-05	CERAMIC 0.01UF M	E	
C4			C91-0757-05	CERAMIC 0.001UF K		
C5		*	CC45FSL1H090D	CERAMIC 9.0PF D	E	
C6			CC45FSL1H060D	CERAMIC 6.0PF D	E	
C6 ,7		*	C91-0716-05	CERAMIC 3.9PF K	KPKP	
C7		*	C91-0716-05	CERAMIC 3.9PF K	E	
C8		*	C91-0720-05	CERAMIC 8.2PF K		
C9			C91-0749-05	CERAMIC 220PF K		
C10 ,11			C91-0769-05	CERAMIC 0.01UF M		
C12			CC45FSL1H020C	CERAMIC 2.0PF C	E	
C13			C91-0709-05	CERAMIC 1PF M	KPKP	
C13		*	C91-0713-05	CERAMIC 2.2PF K	E	
C14		*	CC45FUJ1H080D	CERAMIC 8.0PF D		
C15		*	C91-0725-05	CERAMIC 15PF J		
C16			C91-0733-05	CERAMIC 33PF J		
C17			C91-0769-05	CERAMIC 0.01UF M		
C18		*	C91-0713-05	CERAMIC 2.2PF K		
C19			CE04FW1C470M	ELECTRO 47UF 16WV		
C20			CC45FSL1H470J	CERAMIC 47PF J		
TC1			C05-0302-05	CERAMIC TRIMMER CAPACITOR(11PF		
L1			L31-0512-05	FM-RF COIL		
L2			L31-0513-05	FM-RF COIL		
L3			L31-0515-05	FM-RF COIL		
L4			L31-0514-05	FM-RF COIL	KPKP	
L4 ,5			L31-0514-05	FM-RF COIL	E	
L6			L40-1092-14	SMALL FIXED INDUCTOR(1UH,M)		
L7		*	L30-0427-05	FM IFT		
L8		*	L32-0318-05	FM OSCILLATING COIL		

E: Scandinavia & Europe H:Audio Club K: USA P: Canada
S: South Africa T: England U: PX(Far East, Hawaii)
UE: AAFES(Europe) X: Australia M: Other Areas

Destination
K,P: KVR-A70R (Silver)
Others: KVR-A70R (Black)

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Telle ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
R16			RD14GB2E101J	FL-PR0@F RD 100 J 1/4W		
D1 -4			KV1310-4	VARIABLE CAPACITANCE DI@DE	E	
D1 ,2			KV1310-3	VARIABLE CAPACITANCE DI@DE	KPKP	
D4			KV1310-3	VARIABLE CAPACITANCE DI@DE	KPKP	
Q1			2SK161(GR)	FET	KPKP	
Q1			3SK73(GR)	FET	E	
Q2			2SC1923(@)	TRANSIST@R		
Q3			2SK161(Y,GR)	FET	E	
Q4 ,5			2SC1923	TRANSIST@R		

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Destination
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SPECIFICATIONS

Audio Section (IHF '66)

Power Output

55 watts per channel minimum RMS, both channel driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion

60 watts per channel minimum RMS, both channel driven at 8 ohms from 40 Hz to 20,000 Hz with no more than 0.03% total harmonic distortion

63 watts per channel minimum RMS, both channel driven into 8 ohms at 1 kHz with no more than 0.008% total harmonic distortion

Total Harmonic Distortion
- **(20 Hz - 20,000 Hz, 8 ohms)** ..... 0.008% at 55 watts
- **(1 kHz, 8 ohms)** ..... 0.002% at 55 watts

Inter Modulation Distortion .... 0.008% at 55 watts

Input Sensitivity/Impedance
- **PHONO (MM)** ..... 2.5 mV/47 kohms
- **CD/AUX, TAPE, VIDEO** ..... 150 mV/47 kohms

Frequency Response
- **PHONO (RIAA Standard Curve)** ..... 20 Hz - 20,000 Hz... ±0.5 dB
- **TAPE, CD/AUX** ..... 10 Hz - 100,000 Hz... +0, −3 dB

Signal to Noise Ratio
- **PHONO (MM)** ..... 73 dB
- **CD/AUX, TAPE, VIDEO** ..... 100 dB

Graphic Equalizer
- **Center Frequency** ..... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
- **Control Range** ..... ±12 dB

Video Section

Inputs VIDEO 1, 2 ..... 1 Vp-p, 75 ohms unbalanced

Outputs
- **VIDEO 1, 2** ..... 1 Vp-p, 75 ohms unbalanced
- **MONITOR VIDEO OUT** .... 1 Vp-p, 75 ohms unbalanced

FM Tuner Section

Tuning Frequency Range ..... 87.5 MHz - 108 MHz

Antenna Impedance ..... 300 ohms balanced & 75 ohms unbalanced

Usable Sensitivity ..... 10.8 dBf (1.9 μV)

50 dB Quieting Sensitivity
- **MONO** ..... 14.2 dBf (2.8 μV)
- **STEREO** ..... 36.8 dBf (38 μV)

Signal to Noise Ratio at 65 dBf
- **MONO** ..... 80 dB
- **STEREO** ..... 72 dB

Total Harmonic Distortion at 1,000 Hz
- **MONO** 0.07%
- **STEREO** 0.1%

Frequency Response ..... 30 Hz - 15,000 Hz +0.5, −2 dB

Stereo Separation ..... 50 dB at 1,000 Hz

Selectivity ..... 60 dB at 400 kHz

Capture Ratio ..... 1.0 dB

Image Rejection Ratio ..... 38 dB

IF Rejection Ratio ..... 80 dB

Spurious Rejection Ratio ..... 75 dB

AM Suppression Ratio ..... 72 dB

AM Tuner Section

Tuning Range
- **530 kHz - 1,610 kHz (with the AM tuning interval set at 10 kHz)**

Usable Sensitivity ..... 10 μV (400 μV/m)

Signal to Noise Ratio ..... 50 dB

Total Harmonic Distortion 0.3%

Selectivity ..... 25 dB

General

Power Requirement ..... 60 Hz, 120 V...USA & Canada Models

Power Consumption ..... 3.0A...USA & Canada Models/200 W (Others)

AC Outlet ..... Switched × 3 (200W)

Dimensions (W × H × D) ..... 420 × 128.5 × 321 mm 16-9/16" × 5-1/6" × 12-5/8"

Weight ..... Net 8.4 kg (18.5 lb)

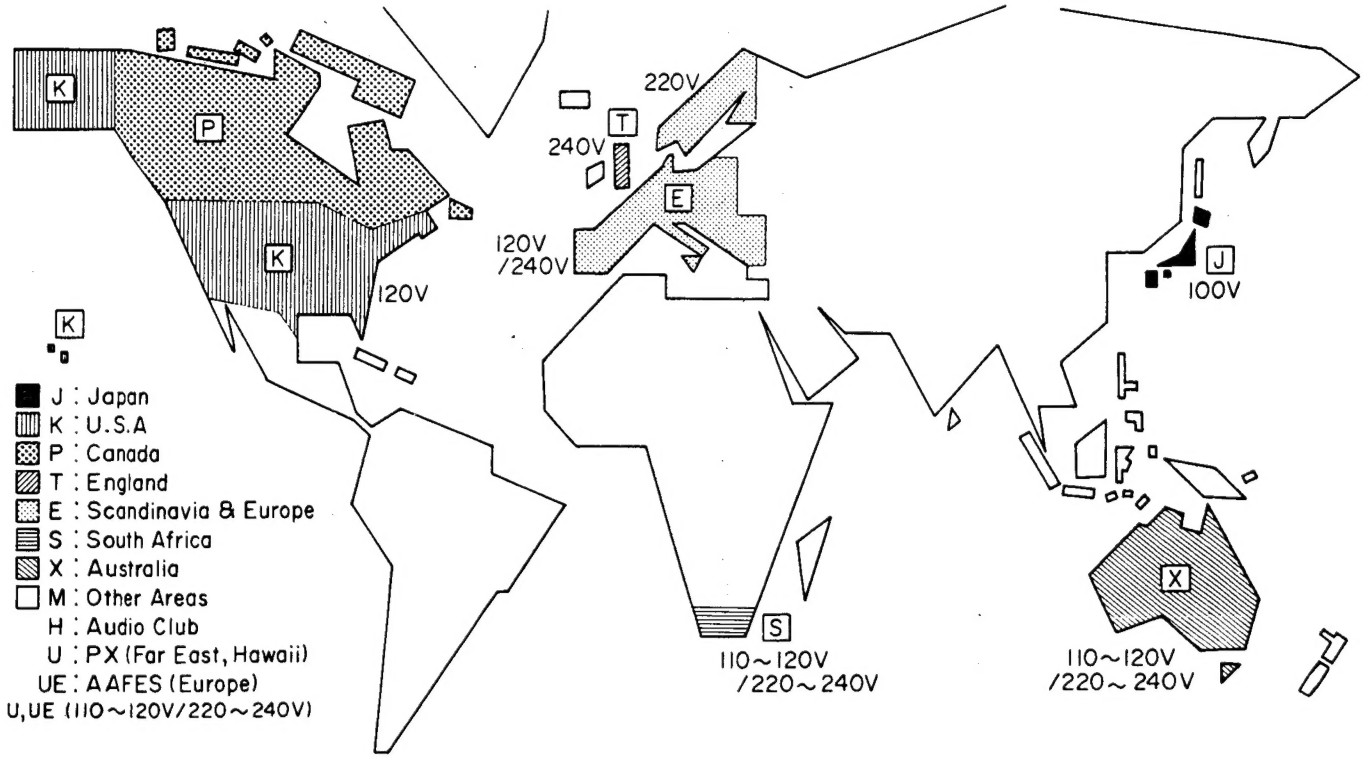
Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

KVR-A70R

WORLD MAP & AREA CODE



Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

TRIO-KENWOOD CORPORATION

Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD ELECTRONICS
DIVISION OF KENWOOD U.S.A. CORPORATION
1315 E. Watsoncenter Rd., Carson, California 90745; U.S.A.
75 Seaview Drive, Secaucus, New Jersey 07094, U.S.A.

TRIO-KENWOOD CANADA INC.,
1070 Jayson Court, Mississauga, Ontario, Canada L4W 2V5

TRIO-KENWOOD ELECTRONICS, N.V.
Leuvensesteenweg 504 B-1930 Zaventem, Belgium

TRIO-KENWOOD ELECTRONICS GmbH
Rembrücker Str. 15, 6056 Heusenstamm, West Germany

TRIO-KENWOOD FRANCE S.A.
5, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD (AUSTRALIA) PTY. LTD. (INCORPORATED IN N.S.W.)
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.
Wang Kee Building, 5th Floor, 34-37, Connaught Road, Central, Hong Kong